

LIST OF RESEARCH WORKERS 1962

**Research Workers in Agriculture, Animal Health
and Forestry in the British Commonwealth and the
Republic of Ireland.**



**EXECUTIVE COUNCIL OF THE
COMMONWEALTH AGRICULTURAL BUREAUX**

PRICE 45s.

**LIST OF RESEARCH WORKERS
1962**

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LIST OF RESEARCH WORKERS 1962

Research Workers in Agriculture, Animal Health
and Forestry in the British Commonwealth and the
Republic of Ireland.



**EXECUTIVE COUNCIL OF THE
COMMONWEALTH AGRICULTURAL BUREAUX**

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The List contains the names and postal addresses and, where the information has been supplied, the telephone numbers and abbreviated telegraphic addresses of research workers in Agriculture, Animal Health and Forestry, with an indication generally of the lines of study in which each worker is specially interested. The List purports to be correct up to the end of 1961, but more recent information has been included wherever possible.

2. The British Commonwealth Scientific Conference 1936 laid down the general pattern for this List when it said that the volume should be strictly limited to those who were engaged in research or actually concerned with its organization, that only the more senior workers need be mentioned to the exclusion of junior technical assistants, and that the special line of study of each research worker should be described in a few words.
3. The Review Conferences of 1946 and 1950 extended the List to research workers in universities and museums but, primarily in order to keep down the size and cost of the publication, the Review Conference 1955 excluded people in extension and advisory services as distinct from research.
4. Nevertheless, the List continued to grow. An attempt was consequently made to present the Review Conference 1960 with a more compact and more uniform volume without impairing its usefulness as a book of reference. The present edition follows that pattern.
5. The volume is divided into four parts. Part A gives details for the Commonwealth Institutes and Bureaux; Part B gives the names and addresses of research workers by countries; Part C is an index of the institutions mentioned in the List; and Part D an alphabetical index of the names of research workers.
6. The particulars given in this publication have been compiled from information supplied by the governments and authorities concerned.
7. Errors and omissions should be brought to notice through Liaison Officers who are listed on pages 2 and 3.
8. Since the List went to press Jamaica, Trinidad & Tobago and Uganda, which are shewn under Dependent Territories, have become independent sovereign states within the Commonwealth. Since the last List was published, the Republic of South Africa has withdrawn from the Commonwealth; Cyprus, while remaining a member of the Commonwealth, has withdrawn from the Commonwealth Agricultural Bureaux; and the Republic of the Sudan, which was an Associate of the organization, has terminated its association with effect from 31st March, 1962. The new List, therefore, contains no particulars of research workers in those three countries.

COMMONWEALTH AGRICULTURAL BUREAUX,
FARNHAM HOUSE,
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BUCKS., ENGLAND.
October, 1962

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V. P. Whittaker, M.A., D.Phil.: brain acetylcholine metabolism in, and isolated nerve endings from, sheep and other animals

EXPERIMENTAL PATHOLOGY

T. Gillman, D.Sc., M.B., B.Ch., *Head of Department*: connective tissue structure and function; arterial diseases; fat absorption and transport in sheep
A. D. Bangham, M.B., B.S., M.R.C.S., I.R.C.P.: chemistry of cell surfaces
E. J. H. Ford, M.V.Sc., M.R.C.V.S.: veterinary supervision of stock; metabolic studies in ruminants
A. E. Pierce, M.Sc., Ph.D., F.R.C.V.S., D.V.S.M.: blood, milk and urinary proteins and antibodies
R. A. Grant, B.Sc., Ph.D.: biochemistry of arteries and connective tissues
R. W. Horne, M.A., M.I.R.E., F.R.M.S.: electron microscopy of virus structure, sub-microscopic cellular particles and body connective tissue fibres
Miss E. M. Tucker, B.Sc., Ph.D.: immunology of sheep blood

PHARMACOLOGY

Miss M. Vogt, M.D., Ph.D., F.R.S., *Head of Unit*: mammalian neuropharmacology
Mrs. M. Holzbauer-Sharman, M.D., Ph.D.: physiology of the mammalian adrenal gland
K. C. Hooper, B.Sc., Ph.D.: brain polypeptides in animals
D. F. Sharman, B.Sc., Ph.D.: neurochemistry of the mammal

PHYSIOLOGY

R. D. Keynes, M.A., Ph.D., F.R.S., *Deputy Director*: physiology of nerve, muscle and electric organ
J. Bligh, B.Sc., Ph.D.: temperature regulation in homeotherms
A. D. Clare, M.A., Ph.D., B.V.M.S., M.R.C.V.S.: magnesium metabolism in ruminants
D. C. Hardwick, B.Sc., Ph.D.: physiology of the mammary gland
F. A. Harrison, B.Sc., M.V.Sc., M.R.C.V.S.: ruminant digestive physiology
Miss C. O. Hehb, M.A., Ph.D.: comparative neurochemistry
K. F. Hosie, B.Sc., Ph.D., M.R.C.V.S.: cardiovascular physiology and body composition during growth
D. L. Ingram, B.Sc., Ph.D.: acclimatization in pigs
K. Krnjevic, M.B., Ch.B., B.Sc., Ph.D.: neurophysiology
J. L. Linzell, B.Sc., Ph.D., M.R.C.V.S.: physiology of the mammary gland
J. F. Mitchell, B.Sc., Ph.D.: chemical transmission in the mammalian brain
D. Morris, B.Sc., Ph.D.: enzymes concerned in chemical transmission
L. E. Mount, M.D., C.M., M.B., B.S.: metabolism during growth and development of the pig
J. S. Perry, B.Sc., Ph.D.: reproduction in pig and guinea-pig
Miss A. Silver, B.Sc., Ph.D.: comparative neurochemistry

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W. G. Burton, M.A., B.Sc.: plant physiology of potatoes
K. L. Edney, B.Sc., A.R.C.S.: mycology; storage diseases
J. C. Fidler, O.B.E., B.Sc., Ph.D., M.Inst.R.: plant physiology, apples and pears
A. Harrison, B.Sc., Ph.D.: plant physiology
A. C. Hulme, M.Sc., Ph.D., D.Sc.: plant biochemistry
J. D. Jones, B.Sc., M.Sc., Ph.D., A.R.I.C., F.C.S.: plant biochemistry, radio-isotope chemistry

UNITED KINGDOM

- G. Mann, A.M.I.Mech.E., A.M.I.Mar.E.: construction and operation of refrigerated stores
D. F. Meigh, B.Sc., Ph.D.: organic chemistry of volatile plant products
W. H. Smith, B.A., Dip.Hort.: plant physiology, vegetables
P. T. G. Twiss, B.Sc.Agr.: handling and storage of potatoes
B. G. Wilkinson, M.A., Ph.D.: plant physiology

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C. R. Furlong, B.Sc., A.R.C.S.: chemistry, storage problems

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ANIMAL ECOLOGY

- A. Brownlee, B.Sc., M.R.C.V.S., *Officer-in-Charge*: influence of diet on the morphology of the gastro-intestinal tract and on its flora

BACTERIOLOGY

- S. J. Edwards, B.Sc., M.Sc., D.Sc., F.R.C.V.S., *Head of Department*: mastitis control; antibiotics
R. L. Chandler, B.Sc., Ph.D., F.R.C.V.S.: Johne's disease and other acid-fast organisms; transmissible encephalopathy of mice
A. McDiarmid, Ph.D., D.Sc., M.R.C.V.S., F.R.S.E.: brucellosis; diseases of free-living mammals and birds
J. D. Rankin, Ph.D., M.R.C.V.S.: Johne's disease and other acid-fast infections

BIOCHEMISTRY

- G. D. Hunter, B.Sc., Ph.D., D.Sc., A.R.C.S., D.I.C., *Officer-in-Charge*: scrapie; bovine ketosis; protein biosynthesis
K. G. Hibbitt, B.V.Sc., Ph.D., M.R.C.V.S.: bovine ketosis

EXPERIMENTAL PATHOLOGY

- I. H. Pattison, B.Sc., M.R.C.V.S., *Head of Department*: mastitis, immunology and serology; scrapie
C. D. Bracewell, B.Sc., B.V.Sc., M.R.C.V.S.: clinical pathology
J. B. Derbyshire, B.Sc., Ph.D., M.R.C.V.S.: immunology of mastitis
W. M. Fitzsimmons, F.R.C.V.S., D.V.T.M., Dip.Agr., *Officer-in-Charge Clinical Pathology*: parasitology
A. Mackenzie, M.R.C.V.S.: histopathology; respiratory diseases

FUNCTIONAL PATHOLOGY

- J. M. Payne, B.Sc., Ph.D., M.R.C.V.S., *Officer-in-Charge*: metabolic diseases
B. F. Sansom, B.A., D.Phil.: radiobiology; metabolic diseases

VIROLOGY

- D. A. Haig, B.V.Sc., D.V.Sc., M.R.C.V.S., *Head of Department*: scrapie; Arbor viruses

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ANIMAL BEHAVIOUR

D. G. M. Wood-Gush, B.Sc., Ph.D.: social and sexual behaviour

BIOCHEMISTRY

D. J. Bell, Sc.D., Ph.D., F.R.S.E.: blood chemistry
W. M. McIndoe, B.Sc., Ph.D.: yolk formation

EMBRYOLOGY

D. A. Ede, B.Sc., Ph.D.: developmental analysis

UNITED KINGDOM

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- J. H. Sang, B.Sc., Ph.D., F.R.S.E., *Assistant Director*: hybrid vigour; gene-environment reaction in *Drosophila*
Miss J. S. S. Blyth, B.Sc., Ph.D.: hybrid vigour and breeding
B. Burnet, B.Sc., Ph.D.: *Drosophila* developmental genetics
A. G. Cock, M.A.: broiler growth; organ transplantation
A. M. MacFarquhar, B.Sc., Ph.D.: growth and species crosses
C. F. Pun, M.S., Ph.D.: hatchability

NUTRITION

- W. Bolton, D.Sc., A.R.I.C., F.C.S., F.R.S.E.: nutritional requirements and digestion
W. A. Dewar, Ph.D., A.R.I.C.: trace elements

PATHOLOGY

- W. G. Siller, B.Sc., Dr.Med.Vet., M.R.C.V.S.: nephritis and metabolic diseases
P. A. L. Wight, B.Sc., Ph.D., M.R.C.V.S., D.V.S.M.: fowl paralysis and nervous diseases

PHYSIOLOGY

- M. H. Draper, M.B., B.S., Ph.D.: biophysics of ion balance
A. R. Gilbert, B.Sc., Ph.D.: circulation and nerve action
P. E. Lake, B.Sc., Ph.D.: artificial insemination

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- Letcombe Regis, Wantage, Berks. Tel.: Wantage 327
R. Scott Russell, M.Sc., M.A., Ph.D., *Director*
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B. O. Bartlett, M.A.: statistics
J. D. Burton, B.Sc., Ph.D., A.R.I.C.: radiochemistry
F. B. Ellis, B.Sc., Ph.D.: field surveys and experiments
E. R. Mercer, B.Sc.: radiochemistry
L. J. Middleton, B.Sc., Ph.D.: plant physiology; foliar absorption of nutrients
J. Moorby, B.Sc.: plant physiology, translocation
P. Newhould, B.Sc., D.Phil.: soil/plant relationships; diffusion of ions in soil
M. G. T. Shone, M.A., D.Phil.: soil/plant relationships; diffusion and exchangeability of ions in plant tissue
V. A. Smith, B.Sc.: radiochemistry
Miss H. M. Squire, M.A., D.Phil.: soil chemistry; diffusion of ions in soil

Weed Research Organization

- Begbroke Hill, Sandy Lane, Kidlington, Oxford. Tel.: Kidlington 3461-4
E. K. Woodford, O.B.E., M.Sc., Ph.D., *Director*
J. D. Fryer, M.A., *Officer-in-Charge of Field Experiments*; *Editor "Weed Research"*
P. J. Boyle, M.A., *Officer-in-Charge, Information Section*; *Editor "Weed Abstracts"*
R. J. Chancellor, B.A.: weed botany
J. G. Elliott, M.A.: weed control practice; arable agriculture and pastureland
G. L. Hodgson, M.A., D.Phil.: weed botany (*Pteridium aquilinum*)
K. Holly, B.Sc.Agr., Ph.D.: evaluation of selective phytotoxicity of herbicides in pot culture

UNITED KINGDOM

- J. Holroyd, B.Sc.: field evaluation of herbicides and agronomic methods of weed control (agricultural)
G. W. Ivens, M.A., D.Phil.: field evaluation of herbicides and agronomic methods of weed control (horticultural)

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Prof. C. H. Waddington, C.B.E., Sc.D., D.Sc., F.R.S., *Director (Honorary)*:
physiological genetics
D. S. Falconer, B.Sc., Ph.D., *Deputy Director*: quantitative genetics
E. B. Basden: *Drosophila* systematics
R. A. Beatty, M.A., Ph.D.: genetics of gametes
Miss A. McLaren, M.A., D.Phil.: reproductive physiology
I. L. Mason, B.A.: livestock breeding
E. C. R. Reeve, B.A., D.Phil.: quantitative genetics
R. C. Roberts, B.Sc., Ph.D.: quantitative genetics
A. Robertson, B.A., D.Sc.: quantitative genetics; livestock breeding
F. W. Robertson, B.Sc., Ph.D., D.Sc.: quantitative genetics
J. L. Sirlin, Dr.Nat.Sci.: embryology

Unit of Biometrical Genetics

- (at Department of Genetics, University of Birmingham).
Tel.: Edgbaston 1522
Prof. K. Mather, C.B.E., F.R.S., *Director (Honorary)*: organization, properties and analysis of polygenic systems
J. S. Gale, Ph.D. (Cantab.): competition studies in *Drosophila*
J. L. Jinks, Ph.D. (Birm.): cytoplasmic inheritance and population studies with wild fungi; diallel analysis
B. John, Ph.D. (Wales), *(Honorary Member)*: experimental and population cytology
R. M. Jones, M.A. (Cantab.): mathematical aspects of biometrical genetics

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*See also Institute of Animal Genetics, University of Edinburgh, page 78

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R. Laughlin, M.A.: ecology and physiology of *Tipulidae*
A. D. Lees, M.A., Ph.D.: plant growth cabinets; polymorphism in aphids
A. Milne, M.A., D.Sc., Ph.D., M.Inst.Biol., F.R.S.E.: ecology of *Tipulidae*
J. E. Treherne, B.Sc., Ph.D.: penetration and action of insecticides; physiology of insect nervous system

Unit of Microbiology

(at Department of Microbiology, University of Sheffield).
Tel.: Sheffield 78555, Ext. 200

Prof. S. R. Elsden, B.A., Ph.D., *Director (Honorary)*: relationship between growth of bacteria and their energy supply; metabolism of rumen bacteria
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J. C. Peele, B.A., Ph.D.: factors influencing the formation of Azotobacter cysts

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R. Atkin, B.A.: enzyme systems concerned with β -oxidation and α -oxidation of nitriles in plants
C. H. Fawcett, M.Sc., Ph.D.: synthesis of plant growth regulators; isolation and identification of naturally occurring antifungal plant constituents
K. Rothwell, B.Sc., Ph.D.: synthesis of plant growth regulators; isolation and chemical examination of hormone inhibitors in plant tissues
D. M. Spencer, B.Sc., Ph.D.: systemic and direct fungicidal activity of synthetic and natural products
H. F. Taylor, B.Sc.Hort.: hormone and hormone inhibitor status of plant tissues
S. T. C. Wright, B.Sc., Ph.D.: interaction of gibberellins, kinins and auxins in the growth of plant tissue

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W. W. Schwabe, Ph.D., D.Sc.: photoperiodism, vernalization, and flowering
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Imperial College of Science & Technology, Prince Consort Road, London, S.W.7. Tel.: Kensington 5111

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G. D. Towner, Ph.D.: mechanical properties of soil and field drainage studies
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M. W. Rees: structure of virus proteins

A. R. Trin, B.A., Ph.D.: chemistry of viruses and nucleic acids

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V. H. Booth, B.A., Ph.D.: vitamin assays at Dunn Nutritional Laboratory, Cambridge

R. Hill, M.A., Sc.D., F.R.S.: plant biochemistry at School of Biochemistry, University of Cambridge

H. T. MacPherson, B.Sc., Ph.D.: grass conservation at Department of Chemistry, University of Edinburgh

Mrs. C. L. Mann, M.D., Ph.D., biochemistry of reproductive organs at School of Agriculture, University of Cambridge

D. J. D. Nicholas, D.Sc., Ph.D., A.K.C., F.R.I.C.: biochemistry of nitrogen fixation; mineral nutrition of micro-organisms at Long Ashton Research Station

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C. Culpin, M.A., Dip.Agr. (Cantab.), M.I.A.E.: mechanization

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Miss J. M. Taylor, B.Sc., M.Inst.Biol., F.I.W.Sc.
M. G. White, M.A., F.R.E.S.

MYCOLOGY

J. G. Savory, B.Sc., M.Inst.Biol., F.I.W.Sc., *Head of Section*
R. S. Smith, B.Sc., Ph.D., D.I.C.

PHYSICS

R. F. S. Hearmon, F.Inst.P., F.I.W.Sc., *Head of Section*

PULPING

E. J. Gibson, B.Sc., Ph.D., A.R.I.C., *Head of Section*
J. M. Dinwoodie, B.Sc., Ph.D., A.I.W.Sc.
D. F. Packman, B.E.M.

SEASONING AND WOOD BENDING

W. C. Stevens, M.A., A.M.I.Mech.E., F.I.W.Sc., *Head of Section*
R. E. Hodge, Assoc.I.Mech.E., A.I.W.Sc.
D. D. Johnston, A.I.W.Sc.
G. H. Pratt, A.I.W.Sc.
N. Turner, A.I.W.Sc.

TIMBER MECHANICS

J. G. Sunley, M.Sc., F.I.W.Sc., *Head of Section*
A. J. Comben, B.Sc.
W. T. Curry, Dip.Mech.E.E., A.I.W.Sc.

WOOD PRESERVATION

D. N. R. Smith, *Head of Section*

WOOD STRUCTURE

E. W. J. Phillips, B.Sc., Ph.D., A.R.C.S., F.I.W.Sc., *Head of Section*
J. D. Brazier, B.Sc.

WOODWORKING

K. J. S. Walker, M.A., A.M.I.Mech.E., *Head of Section*
H. J. Endersby
R. Goodchild, A.I.W.Sc.

Tropical Products Institute

56/62 Gray's Inn Road, London, W.C.1. Tel.: Chancery 5412
E. S. Hiscocks, M.Sc., F.R.I.C., *Director*

DIVISION A

P. C. Spensley, M.A., B.Sc., D.Phil., F.R.I.C., *Assistant Director*

Power Sources and Mechanical Processes

L. R. B. Shackleton, B.Sc., Ph.D., A.I.C., F.R.I.C., *Head of Section*
L. J. Flaws: engineering
C. C. Noaks, A.I.C., A.R.I.C.: chemical plant

DIVISION B

L. Horton, B.Sc., Ph.D., A.R.C.S., D.I.C., A.R.I.C., *Assistant Director*

UNITED KINGDOM

Drugs

A. J. Feuell, B.Sc., Ph.D., A.R.I.C., *Head of Section*

Mrs. B. F. Nesbitt, M.A., Ph.D.: extraction and characterization of alkaloids

Essential Oils, Spices, Gums and Resins

G. B. Pickering, B.A., B.Sc., D.Phil., A.R.I.C., *Head of Section*: research and development of essential oils

E. G. Brown, B.Sc.: quality and marketing of spices

K. Jewers, B.Sc., Ph.D.: resins and banana skin wax

W. S. A. Matthews, A.R.I.C.: distillation and analysis of essential oils

Pesticides

E. M. Thain, B.Sc., Ph.D., A.R.I.C., *Head of Section*: pesticide chemistry

J. A. Dawson, B.Sc., A.R.I.C.: development of analytical techniques for pesticides

P. J. Godin, B.Sc., Ph.D., A.R.C.S., D.I.C.: chemistry of natural pesticides

Physical Chemistry

H. J. Dothic, B.Sc., F.R.I.C., *Head of Section*: X-ray fluorescence

T. J. Coomes, B.Sc.: organic chemistry and spectroscopy

Sugar Esters

G. R. Ames, B.Sc., Ph.D., A.R.I.C., *Head of Section*

DIVISION C

W. D. Raymond, O.B.E., B.Sc., Ph.D., F.R.I.C., *Assistant Director*

Foods and Feedingstuffs

L. H. Greenwood-Barton, B.Sc., F.R.I.C., F.R.S.H., *Head of Section*: food legislation and administration

D. Halliday, B.Sc., A.R.I.C.: amino acid analysis of foods and feedingstuffs

Fruits, Vegetables and Edible Nuts

E. H. G. Smith, M.A., *Head of Section*: production and marketing

G. E. Howard, B.Sc., Ph.D., A.R.I.C.: chemistry of fruit and vegetable products

Oils, Fats and Waxes

J. A. Cornelius, B.Sc., Ph.D., A.R.I.C., *Head of Section*

DIVISION D

R. H. Kirby, B.Com., Ph.D., *Assistant Director*

Economics and Statistics

Miss E. Orr, B.Sc.Econ., *Head of Section*: marketing of essential oils

Fibres, Paper and Boardmaking, Hides and Skins

A. E. Chittenden: pulp, paper and boardmaking

Miss V. Laws, B.Sc., M.Sc.: structure and mechanical properties of fibres

UNIVERSITIES

UNIVERSITY OF BRISTOL

Queen's Road, Bristol 8. Tel.: 24161

Agriculture and Horticulture

Research Station, Long Ashton, near Bristol. Tel.: Long Ashton 2181
See State-Aided Research Institutes, page 61

UNITED KINGDOM

Botany

E. W. Yemm, B.A., D.Phil., *Professor of Botany*
T. E. T. Bond, D.Sc., Ph.D., *Senior Lecturer in Horticultural Science*
Miss L. E. Hawker, D.Sc., Ph.D., *Reader in Mycology*

Economics (Agricultural Economics)

R. C. Tress, B.Sc.Econ., *Professor of Economics*
S. R. Wragg, M.A., *Senior Lecturer in Agricultural Economics in charge of Bristol Province*

Veterinary Research

R. J. Brocklehurst, M.A., D.M., B.Ch., *Professor of Physiology*
*T. K. Ewer, B.V.Sc., Ph.D., H.D.A., *Professor of Animal Husbandry*
*C. S. Grunsell, Ph.D., M.R.C.V.S., *Professor of Veterinary Medicine*
*A. Messervy, M.R.C.V.S., *Professor of Veterinary Surgery*
C. W. Ottaway, Ph.D., F.R.C.V.S., *Professor of Veterinary Anatomy*
A. Carlyle, B.A., B.V.Sc., M.R.C.V.S., *Senior Lecturer in Veterinary Physiology*
*J. R. Holmes, M.V.Sc., Ph.D., M.R.C.V.S., *Senior Lecturer in Veterinary Medicine*

Zoology

J. E. Harris, M.A., Ph.D., F.R.C., *Professor of Zoology*
R. Bassindale, M.Sc., *Senior Lecturer in Zoology*
H. E. Hinton, B.Sc., Ph.D., D.Sc., F.R.S., *Reader in Entomology*
J. A. Kitching, O.B.E., M.A., Sc.D., Ph.D., F.R.S., *Reader in Zoology*

CAMBRIDGE UNIVERSITY

School of Agriculture

Downing Street, Cambridge. Tel.: Cambridge 58381

Sir J. B. Hutchinson, C.M.G., Sc.D., F.R.S., *Drapers' Professor of Agriculture*
F. Hanley, O.B.E., M.A., *Reader in Crop Husbandry*

University Lecturers

M. G. Barker, M.A.: agricultural implements and machinery
R. C. Campbell, Ph.D.: statistics
K. J. Carpenter, Ph.D.: animal nutrition
S. Dickinson, M.A., M.Sc. (Wales): plant pathology
R. E. Evans, Ph.D.: animal nutrition
D. G. Gilmour, Ph.D.: agricultural zoology and physiology
J. Hammond (Jr.), M.A.: agricultural zoology and physiology
A. Lazenby, Ph.D.: agricultural botany
P. H. Lowings, M.A., Ph.D. (Belf.): agricultural mycology
D. G. Morgan, M.A., M.Sc. (Wales): agricultural botany
J. B. Owen, Ph.D. (Wales): animal husbandry
R. M. S. Perrin, Ph.D.: soil chemistry
C. R. Ribbands, Sc.D.: agricultural entomology
W. J. Ridgman, M.A.: field experimentation
Miss E. H. Whetham, M.A.: history and economics of agriculture

E. C. Childs, Sc.D., Ph.D., *Assistant Director of Research: soil physics*

University Demonstrators

B. W. Bache, Ph.D.: soil science
R. B. Heap, Ph.D. (Nott.): animal physiology

*Veterinary School, Langford, Somerset. Tel.: Churchill 296

UNITED KINGDOM

W. J. S. Kershaw, B.Sc. (Manc.): agricultural entomology
W. M. F. Leat, Ph.D. (Liv.): animal nutrition
B. Wilton, M.A., M.Sc. (Dunelm): agricultural engineering

Senior Assistant in Research

H. Tribe, M.A., Ph.D. (Lond.): soil microbiology

F. Hanley, O.B.E., M.A., *Director of Advanced Students*

A. J. Brookes, M.A., *Director, University Farm*

Farm Economics Branch

F. G. Sturrock, M.A., *Director*
C. S. Barnard, M.A.
J. L. Joy, M.A., B.Sc.Econ. (Lond.)
A. M. M. MacFarquhar, B.Sc.Agr.Econ. (Glas.)
D. B. Wallace, M.A.

Other Research Staff

M. J. Blackwell, M.A., Seconded from the Meteorological Office: meteorology
F. Moriarty, Ph.D. (Lond.): sugar beet pests

School of Veterinary Medicine

Madingley Road, Cambridge. Tel.: Cambridge 55641

ANIMAL PATHOLOGY

W. I. B. Beveridge, D.V.Sc. (Syd.), M.A., *Professor of Animal Pathology and Head of Department*

University Lecturers

A. O. Betts, M.A., Ph.D., B.Sc., M.R.C.V.S.: virus diseases using tissue culture methods and "disease-free" animals
A. R. Jennings, M.A., M.V.Sc., M.R.C.V.S.: diseases of the pig and diseases of wild birds
M. A. Solys, M.A., Ph.D., B.V.Sc., Dr.Med.Vet.: bacterial diseases of domestic animals; immunity in trypanosomiasis
E. J. L. Soulsby, M.A., Ph.D., M.R.C.V.S., D.V.S.M.: parasitological diseases of domestic animals, especially immunity to animal parasites
P. Whittlestone, M.A., Ph.D., B.Sc., M.R.C.V.S.: respiratory diseases of pigs
A. A. Wilson, M.A., M.V.Sc., M.R.C.V.S.: metabolism of magnesium and calcium and renal function in animals and their relation to metabolic disorders

Assistant Directors of Research

H. P. Chu, Ph.D., B.Sc. (China): respiratory diseases of poultry
S. D. Elliott, M.A., M.B., B.Sc., M.D., D.P.H.: streptococcal infections in animals

University Demonstrator

Mrs. M. E. Rose, Ph.D., B.Sc., M.R.C.V.S.: immunological aspects of *Eimeria* infections in rabbits and fowls

Scientific Worker

Mrs. E. Orlans, Ph.D., B.S., M.S.: immunology; characterization of fowl antibodies

VETERINARY CLINICAL STUDIES

L. P. Pugh, C.B.E., M.A., B.Sc., F.R.C.V.S., *Professor of Veterinary Clinical Studies and Head of Department*

UNITED KINGDOM

University Readers

- J. Hickman, M.A., M.R.C.V.S., *Reader in Animal Surgery*: tissue and bone reaction to metallic implants; vascular pattern in bone and joint diseases
T. R. R. Mann, C.B.E., M.D., Sc.D., Ph.D., F.R.S., *Reader in the Physiology of Animal Reproduction*: physiology and biochemistry of reproduction

University Lecturers

- J. T. Abrams, M.A., M.Sc., Ph.D.: animal nutrition; vitamin A deficiency in calves
P. S. Bridge, M.A., B.Sc., M.R.C.V.S., D.V.S.M.: vitamin A deficiency in calves
S. W. Douglas, M.A., M.R.C.V.S.: radiography; diseases of small animals
R. F. W. Goodwin, M.A., Ph.D., B.Sc., M.R.C.V.S.: pathology of the pig; physiology of the new-born; respiratory diseases of pigs
L. W. Hall, M.A., B.Sc., Ph.D., M.R.C.V.S.: anaesthesia; pharmacology of ataractic drugs
M. C. G. Littlewort, M.A., B.Sc., M.R.C.V.S.: cardiovascular system
E. T. Rees Evans, M.A., B.Sc., M.R.C.V.S.: animal haematology; endocarditis in cattle; toxicology
D. W. B. Sainsbury, M.A., B.Sc., Ph.D., M.R.C.V.S.: environmental and housing needs of livestock, including poultry
R. V. Short, Ph.D., M.Sc., M.R.C.V.S.: study of steroid hormones
F. R. Spratling, M.A., M.R.C.V.S.: cystitis and pyelonephritis of the pig
P. D. Storie Pugh, M.B.E., M.C., T.D., M.A., Ph.D., M.R.C.V.S., A.R.I.C.: sheep diseases
R. G. Walker, M.A., M.R.C.V.S.: arterial surgery

Assistant Director of Research

- A. C. Palmer, M.A., Ph.D., M.R.C.V.S.: nervous diseases of animals

University Demonstrator

- P. J. McCosker, M.A., Ph.D., B.V.Sc.: copper metabolism in animals

University Assistant Surgeon to the Veterinary School

- L. N. Owen, M.A., B.V.Sc., F.R.C.V.S.: neoplasms, especially osteo-sarcomata

Scientific Worker

- Miss J. Keilin, M.A., Ph.D.: haemoglobin and haematin compounds; trace metal levels in normal Ayrshire calves

A.R.C. Unit of Insect Physiology, see page 17

A.R.C. Unit of Reproductive Physiology and Biochemistry, see page 18

A.R.C. Unit of Soil Physics, see page 18

A.R.C. Statistics Group, see page 19

UNIVERSITY OF DURHAM

School of Agriculture

King's College, Newcastle-upon-Tyne, I. Tel.: Newcastle 28511

M. McG. Cooper, B.Agr.Sc., B.Litt., Dip.Rur.Econ., F.R.S.E., *Dean of Agriculture and Professor of Agriculture and Rural Economy*

AGRICULTURAL BOTANY

Prof. Martin Jones, M.Sc. (Wales): grassland ecology

Prof. Watkin Williams, D.Sc., M.Sc. (Wales): genetics of crop plants; the nature of heterosis; developmental genetics

F. Blackburn, B.Sc. (Dunelm), M.S. (Rutgers): soil microflora and soil biogenesis; taxonomy of streptomyces

UNITED KINGDOM

Mrs. H. II. Clark, M.Sc. (Dunelm): the history and evolution under cultivation
of the temperate cereal
J. H. W. Holden, B.Sc. (Wales): species relationships among species of *Avena*

AGRICULTURAL ECONOMICS

Marketing

E. M. Carpenter, M.A. (Oxon.)
Miss K. Dent, B.Sc. (Dunelm)
S. Robson, B.Sc. (Dunelm)
W. G. R. Weeks, B.Sc. (Dunelm), F.R.Econ.S.

Farm Management and agricultural production

G. II. Brayshaw, M.A. (Cantab.)
W. T. Davison
R. F. Lord, B.Sc.Agr. (Lond.), N.D.A.
A. W. Tansey, B.Sc.Agr. (Lond.)
T. Winter, M.Sc., Dip.Agr. (Dunelm), N.D.A.

AGRICULTURAL ENGINEERING

Land reclamation and mechanization studies.
H. Fail, B.Sc. (Dunelm), M.I.Agr.E.
D. J. G. Greig, B.Sc.Agr. (Leeds), M.Sc.Agr.Eng. (Dunelm), A.M.I.Agr.E.
Tractor and implement dynamics.
A. R. Recce, B.Sc., M.Sc.Agr.Eng. (Dunelm), A.M.I.Mech.E.

AGRICULTURAL ENTOMOLOGY

G. Heslop Harrison, B.Sc., Ph.D., D.Sc. (Dunelm), F.R.S.E.: studies in Insecta especially Homoptera
A. Ibbotson, B.Sc. (Birm.), Dip.Agr.Sc. (Cantab.), D.I.C., Ph.D. (Dunelm): ecology and hionomics of frit fly
Biology, ecology and physiology of selected agricultural pests especially garden chafer, leatherjacket and swede midge.
*A. Milne, M.A., D.Sc., Ph.D., M.Inst.Biol., F.R.S.E.
*R. Laughlin, M.A. (Cantab.)

ANIMAL NUTRITION

Mineral metabolism of animals; measurement of utilization using conventional and radiochemical techniques; nitrogen metabolism in poultry.
Prof. Brynmor Thomas, D.S. (Dunelm), F.R.I.C.
A. Thompson, M.Sc. (Dunelm), M.S., F.R.I.C.

PLANT NUTRITION

Mineral metabolism of plants.
E. A. Kirkby, B.Sc. (Dunelm)
R. C. Seeley, M.Sc. (Lond.)

SOIL CHEMISTRY AND PHYSICS

Fertilizer response studies; restoration of open cast sites; reclamation of moorland soils.
F. Hunter, B.Sc. (Dunelm), A.R.I.C.
Joyce Pringle, B.Sc.Agr., Ph.D. (Aberd.)

*Members of A.R.C. Unit of Insect Physiology, see page 17

UNITED KINGDOM

Cockle Park Research Farm
(field station for the School of Agriculture)

Prof. M. McG. Cooper, *Director*

ANIMAL BREEDING AND SELECTION

M. Bichard, B.Sc.Agr. (R'dg.), performance and progeny testing in Clun Forest sheep; selection in a poultry population based on a combination of four breeds
Prof. M. McG. Cooper: progeny testing of Friesian bulls for beef production

CROP PRODUCTION

Manurial and cultural studies.

R. Q. Cannell, B.Sc. (Dunelm)
A. Main, B.Sc. (Dunelm)

PASTURE MANAGEMENT AND UTILIZATION

W. J. M. Black, B.Sc. (R'dg.), Ph.D. (Dunelm): conservation of pasture; hypomagnesaemia in grazing animals
D. S. MacLusky, B.Sc. (Leeds), Ph.D. (Glas.): species appraisal; timing and intensity of defoliation

PIG HUSBANDRY

W. C. Smith, B.Sc.Agr. (Edin.), M.Agr.Sc. (N.Z.): housing for pigs; heavy hog production

SHEEP HUSBANDRY

Intensive fat lamb production; housing of breeding ewes.

W. J. M. Black, B.Sc. (R'dg.), Ph.D. (Dunelm)
J. N. Merridew, B.Sc.Agr. (Wales), M.Sc. (Dunelm), *Director, Nafferton Farm*

UNIVERSITY OF EXETER

Department of Economics (Agricultural Economics)

Exeter Province, 1, Courtenay Park, Newton Abbot. Tel.: Newton Abbot 2711/2

Farm organization and management—a study of changes; studies in farm planning; evaluation of various farm management advisory techniques; the economics of farm enterprises with special emphasis on grass as a crop; capital in farming; economic and social studies of problem areas.

V. H. Beynon, B.Sc.Agr.Econ. (Wales)
J. Bradley, B.A. Econ. and Govt. (Brist.)
Miss H. M. Cole, B.Sc.Econ. (Lond.)
E. T. Davies, B.Sc.Agr. (Wales)
G. D. D. Davies, B.Sc.Agr.Econ. (Wales)
W. J. Dunford, B.Sc.Econ. (Lond.)
J. E. Harrison, M.Sc.Agr. (Lond.)
J. A. Langley, M.Sc.Agr. (Lond.)
H. W. B. Luxton, B.Sc.Agr. (Lond.), Dip.Agr.Econ.
S. T. Morris, M.Sc. (Wales)
R. C. Rickard, B.Sc.Econ. (Lond.)

UNIVERSITY OF HULL

Hull. Tel.: Hull 408960

Department of Botany

N. F. Robertson, B.Sc., Ph.D. (Edin.), M.A. (Cantab.), *Professor of Botany*: plant pathology and analysis of pathogenicity

UNITED KINGDOM

- D. J. Boatman, B.Sc., Ph.D. (Lond.), M.A. (Dub.): problems in soil chemistry; the nutrition of vegetation in impoverished areas
B. T. Cromwell, B.Sc., Ph.D. (Liv.), *Reader in Plant Physiology*: alkaloid biosynthesis; amines in plants
J. Friend, B.Sc., Ph.D. (Liv.), Ph.D. (Cantab.): carotenoids; problems in photosynthesis; plastoquinones
P. Holliday, M.A. (Cantab.): plant pathology; Phytophthora
D. H. Morgan, B.Sc. (Sheff.): genetics of micro-organisms
A. Peel, B.Sc., Ph.D. (Nott.): phloem transport

Department of Zoology

- I. C. Williams, B.Sc., Ph.D. (Wales): helminth parasites of wild birds in British Isles; Copepod parasites of red fish, *Sebastes marinus* (L)

LEEDS UNIVERSITY

Department of Agriculture

The University, Leeds, 2. Tel.: Leeds 31577/8

T. L. Bywater, B.Sc. (Wales), M.S. (Wis.), *Professor of Agriculture and Head of the Department*

AGRICULTURE

- T. G. Boaz, M.B.E., M.A., Dip.Agr. (Cantab.): nutrition of the pregnant sow; studies of immediate post natal life of the pig; growth and development of bacon pigs; intensive stocking for fat lamb production; winter feeding of ewes on silage; use of K40 gamma ray analysis for lean meat determination in the pig
J. Dalley, B.Sc. (Leeds): farm management studies
D. C. Dalton, B.Sc. (Dunelm), Ph.D. (Wales): genetic-environmental interactions in mice
D. R. Hodgson, B.Sc., Ph.D. (Leeds), Dip.Agr. (Cantab.): undersowing and its effect on yield of cereals and one year leys; response of grass to nitrogen; residual effect of one year leys on soil fertility
R. Holliday, B.Sc. (Leeds): plant population studies on various crops; organic manuring of farm crops; fertilizers and rotations in relation to the soil's intrinsic productive potential; clover-nitrogen interaction in grassland

AGRICULTURAL BACTERIOLOGY

- A. N. Barker, M.Sc., Ph.D. (Leeds): soil microbiology
J. Wolf, M.Sc. (Rdg.): aerobic spore-formers; germination and serology

AGRICULTURAL BOTANY

- J. H. Western, B.Sc., Ph.D. (Wales), *Professor of Agricultural Botany*: diseases of herbage plants
D. J. Harberd, M.Sc. (Wales): genecology of hill grazings
A. Powell Jones, M.Sc. (Wales): *Streptomyces scabies* on root crops

AGRICULTURAL CHEMISTRY

- D. A. Swann, B.Sc. (Rdg.), M.S. (Corn.): protein digestion in sheep
W. N. Townsend, B.Sc. (Leeds): soil-plant nutrient relations
J. S. Willcox, B.Sc. (Lond.), F.R.I.C.: poultry nutrition

AGRICULTURAL ECONOMICS

- C. J. Black, B.Sc. (Lond.), B.Litt., N.D.A., Dip.Agr.Econ. (Oxon.): capital in agriculture

UNITED KINGDOM

- J. B. Butler, M.Sc. (Lond.), M.Com. (Birm.): farm management studies
G. B. Clarke, B.Sc.Econ. (Lond.), Dip.Agr.Sc. (Cantab.): farm management studies
A. G. Jeffrey, B.Com. (Leeds): revision of records and accounts for farm management
W. H. Long, M.A. (Oxon.): history of agriculture
A. A. Marsh, B.Sc.Agr. (R'dg.), Dip.Agr.Econ. (Oxon.): systems of farming
Miss M. C. Mathieson, B.Sc.Econ., M.Sc.Agr. (Lond.): labour productivity and mechanization
I. G. Simpson, M.Sc. (R'dg.): livestock enterprise studies
A. J. Wynne, B.Sc. (Lond.), N.D.A.: economics of milk production

AGRICULTURAL ZOOLOGY

- N. H. E. Gibson, B.Sc. (Lond.), Ph.D. (Leeds): biological control of insects; ecology of soil arthropods
B. Whittington, B.Sc., Ph.D. (Sheff.): insect pathology; parasitic nematodes

VETERINARY SCIENCE

- K. G. Towers, B.V.Sc. (Liv.), M.R.C.V.S.: fluorosis in domesticated animals; piglet mortality

UNIVERSITY OF LIVERPOOL

Brownlow Hill, Liverpool 3. Tel. Royal 6022

Faculty of Veterinary Science

ANIMAL HUSBANDRY

- J. O. L. King, B.Sc., M.V.Sc., Ph.D., M.R.C.V.S., *Reader in Animal Husbandry*: environmental factors affecting composition of cow's milk; value of certain food additives in poultry; influence of different protein levels in diets of pigs
R. Ewbank, B.V.Sc., M.R.C.V.S.: diagnostic tests for subclinical mastitis in cows; management factors in development of young animals; behaviour of animals under restraint

VETERINARY ANATOMY

- A. S. King, B.Sc., Ph.D., M.R.C.V.S., *Professor of Veterinary Anatomy*: age changes in intervertebral discs; avian breathing
R. A. L. Batt, B.V.Sc., B.Sc., M.R.C.V.S.: growth rates of tissues
G. K. Benson, B.Sc., Ph.D.: hormonal control of lactation
J. W. Dransfield, M.V.Sc., M.R.C.V.S.: structure and function in the hip joint
T. D. Glover, M.A., Ph.D., B.Sc., M.R.C.V.S.: transport and fate of gametes

VETERINARY BIOCHEMISTRY

- M. McC. Barnes, B.Sc., Ph.D.: vitamin E metabolism

VETERINARY PARASITOLOGY

- M. J. Clarkson, B.Sc., M.V.Sc., M.R.C.V.S.: histomoniasis in turkeys; liver function in birds
L. S. Forbes, B.V.Sc., M.R.C.V.S.: epidemiology of hydatid disease; tapeworm neuro-muscular transmission

VETERINARY PATHOLOGY AND BACTERIOLOGY

- D. L. Hughes, Ph.D., F.R.C.V.S., Dip.Bact., *Professor of Veterinary Pathology*: arthritis; bovine mastitis
D. Allan, M.R.C.V.S.: pathogenesis of enteric infections in animals and birds

UNITED KINGDOM

- A. Buxton, Ph.D., F.R.C.V.S.: pathogenesis of enteric infections in animals and birds
J. McC. Howell, B.V.Sc., M.R.C.V.S.: neuropathology; vitamin A and reproduction
J. R. Thominson, B.Sc., M.R.C.V.S.: pathogenesis of enteric infections in animals and birds

VETERINARY PHARMACOLOGY

- A. Knifton, B.V.Sc., B.Sc., M.R.C.V.S.: action of drugs on uterus of pig

VETERINARY PREVENTIVE MEDICINE

- E. G. White, Ph.D., D.Sc., F.R.C.V.S., *Professor of Veterinary Preventive Medicine*: helminth infections; urinary calculi in dogs
F. T. W. Jordan, B.Sc., Ph.D., M.R.C.V.S.: respiratory diseases of poultry
A. G. Singleton, B.V.Sc., M.R.C.V.S.: ruminant digestion

VETERINARY SURGERY, OBSTETRICS AND MEDICINE

- Surgical techniques in horses and cattle; anaesthesia in horses and cattle; infertility in bovines; diagnosis of disease in bovine abdomen; blood picture as aid to diagnosis in bovine species; sedation and anaesthesia in pigs.
J. C. Wright, D.Sc., M.V.Sc., F.R.C.V.S., *Professor of Veterinary Surgery*
L. Arnall, B.V.Sc., M.R.C.V.S.: dental development in dogs; diseases of cage-birds
G. B. Edwards, B.V.Sc., M.R.C.V.S.
P. A. Neal, B.V.Sc., M.R.C.V.S.
H. E. Ritchie, B.V.Sc., M.R.C.V.S.
A. C. Shuttleworth, M.V.Sc., F.R.C.V.S., *Reader in Veterinary Surgery*: surgical techniques in the dog

SUB-DEPARTMENT OF GENETICS

- P. M. Sheppard, M.A., D.Phil., *Reader in Genetics*: genetics of chickens; resistance to warfarin poisoning in rats and mice

LONDON UNIVERSITY

Bedford College

Regent's Park, London, N.W.1. Tel.: Welbeck 5743

BOTANY

- Prof. L. J. Audus, M.A., Ph.D. (Cantab.), F.L.S.: physiology of root growth with particular reference to the action of plant growth regulators; the mechanism of plant growth movements; magnetic fields and plant growth
Miss L. E. Bentley, B.Sc. (Manc.), Ph.D. (Lond.): acid metabolism
A. T. Bull, Ph.D. (Nott.): fungal enzyme systems in the degradation and bio-synthesis of carbohydrates
B. M. Faulkner, B.Sc. (Birm.): cytoplasmic inheritance in fungi and the rôle of the cytoplasm in the differentiation and development of the cell
F. Rose, Ph.D. (Lond.): British plant distribution and ecology, with particular reference to the Bryophyta
B. C. Sharman, Ph.D. (Leeds): genetics of wheat species; leaf development in grasses and cereals
D. C. Spanner, Ph.D. (Lond.): translocation of sugars in higher plants; electron microscopy of phloem
L. P. Turnbull, M.Sc. (N.Z.): cryptogamic botany with special reference to algae; physiology of sexual reproduction in algae

UNITED KINGDOM

ZOOLOGY

- Prof. N. Millott, D.Sc. (Sheff.), Ph.D. (Cantab.): sensitivity to light and associated pigments; invertebrate nervous systems; biochemistry of melanins, carotenoids and naphthoquinones
R. P. Dales, Ph.D. (Lond.): storage and utilization of glycogen and fats in annelids; pigments taxonomy and biology of polychaetes
Miss B. M. Gilchrist, B.Sc. (Lond.): the influence of salinity on *Artemia*; the problem of biological races; crustacean pigments
J. Green, Ph.D. (Lond.): growth, reproduction and haemoglobin synthesis in *Daphnia*; estuarine faunas; parasites and epibionts of *Cladocera*; metabolism of carotenoids
E. G. Healey, Ph.D. (Lond.), D.Phil. (Munich): pigmentation and colour change in fish
Miss F. E. Ince, M.Sc. (Lond.): developmental studies in molluscs and reptiles
A. J. Pontin, D.Phil. (Oxon.): ant behaviour
Mrs. R. M. Pontin, B.Sc. (Lond.): biology of rotifers

Birbeck College

Malet Street, London, W.C.1. Tel.: Langham 6622

DEPARTMENT OF BOTANY

- C. T. Ingold, D.Sc., Professor and Head of Department: spore dispersal in fungi, aquatic fungi
P. D. Casselton, B.Sc., Ph.D.: respiration in algae
P. A. Dixon, B.Sc.: fungi (lower ascomycetes)
J. D. Dodge, B.Sc., Ph.D.: cytology of peridinians
J. K. Morton, Ph.D.: biosystematics
B. D. Plunkett, B.Sc., Ph.D.: morphogenesis in hymenomycete sporophores
K. Wilson, M.Sc., Ph.D., Reader: fine structure of cell walls and other aspects of plant anatomy

DEPARTMENT OF ZOOLOGY

- W. S. Bullough, B.Sc., Professor and Head of Department
R. F. Chapman, B.Sc., Ph.D.: effects of pre-conditioning on locust behaviour

Imperial College of Science and Technology

Prince Consort Road, South Kensington, London, S.W.7. Tel.: Kensington 5111

BOTANY

- Prof. W. O. James, M.A., Ph.D., F.R.S.: plant physiology
Prof. Helen K. Porter, D.Sc., F.R.I.C., D.I.C., F.R.S.: plant physiology
K. L. Alvin, Ph.D.: palaeobotany
H. W. Buston, D.Sc., A.R.C.S., D.I.C.: biochemistry
A. H. Dadd, Ph.D., B.Sc., A.R.C.S.: microbiology
D. H. Dalby, Ph.D., B.Sc.: taxonomy
B. J. Deverall, Ph.D., B.Sc., D.I.C.: mycology and plant pathology
J. Edelman, Ph.D., B.Sc., A.R.C.S.: enzymology
J. L. Gay, Ph.D., M.Sc., B.Sc.: microbiology
A. D. Greenwood, B.Sc.: analytical cytology
J. W. Hannay, Ph.D.: plant physiology
S. E. Jacobs, D.Sc., Ph.D., A.R.C.S.: microbiology
K. A. Kershaw, Ph.D.: ecology
J. F. Levy, B.Sc., A.R.C.S.: timber technology
P. G. Mantle, Ph.D., A.R.C.S., D.I.C.: biochemistry

UNITED KINGDOM

- J. Russell, Ph.D., B.Sc.: biochemistry
A. J. Rutter, Ph.D., A.R.C.S.: ecology
R. J. Threlfall, Ph.D., B.Sc., A.R.C.S., D.I.C.: genetics
B. E. J. Wheeler, Ph.D., B.Sc.: plant pathology
F. H. Whitehead, M.A., D.Phil.: experimental taxonomy
R. K. S. Wood, Ph.D., B.Sc., A.R.C.S., D.I.C.: plant pathology

CHEMISTRY

- A. H. Cornfield, Ph.D., M.Sc., A.R.C.S., D.I.C., F.R.I.C.: agricultural chemistry

ZOOLOGY AND APPLIED ENTOMOLOGY

Entomology

- Prof. O. W. Richards, D.Sc., F.R.S.: insect ecology and taxonomy
R. E. Blackith, Ph.D.: statistical problems especially in connection with insect toxicology
K. Boratynski, Ph.D.: taxonomy and biology of scale insects
R. G. Davies, M.Sc.: insect morphology
J. P. Dempster, Ph.D.: insect ecology
H. E. Goto, B.Sc.: taxonomy and biology of *Collembola*
A. E. H. Higgins, A.R.C.S.: methods of application of insecticides
C. T. Lewis, Ph.D.: penetration of the insect cuticle; insect sense-organs
O. F. Lubatti, Ph.D.: fumigation
D. R. P. Murray, Ph.D.: biochemical problems of insect physiology
A. B. P. Page, Ph.D.: control of insects by chemical methods
J. W. Siddorn, B.Sc.: microclimatology
T. R. E. Southwood, Ph.D.: biology of the frit fly; taxonomy and biology of Heteroptera
Miss N. Waloff, Ph.D.: insect ecology
M. J. Way, M.A.: integration of chemical and biological control of insect pests

Parasitology

- Prof. B. G. Peters, M.Sc., Ph.D., Hon. A.R.C.S.: biology and taxonomy of nematodes
F. Call, Ph.D.: soil fumigation; physiology of eelworms
Miss E. U. Canning, Ph.D.: protozoa in relation to insect pathology
N. G. Hague, Ph.D.: biology of plant nematodes

A.R.C. UNIT OF PLANT PHYSIOLOGY, see page 18

King's College

DEPARTMENT OF BOTANY

- 68 Half Moon Lane, Herne Hill, London S.E.24. Tel.: Brixton 2600
J. F. Sutcliffe, D.Sc., Ph.D., *Reader*: absorption of mineral salts
R. Barton, M.Sc., Ph.D.: ultrastructure of cycad sperm
J. Carpenter, B.A.: genetics of *Drosophila*
C. F. Cresswell, M.Sc., Ph.D.: nitrate reduction
Mrs. J. E. Keys, B.Sc., Ph.D., D.I.C.: bulbing in onions
G. Metcalfe, M.A., Ph.D.: ecology of micro-organisms
Miss K. V. Symonds, B.Sc., Ph.D.: soil microbiology
M. B. Wilkins, B.Sc., Ph.D., A.K.C.: metabolic rhythms

London School of Hygiene and Tropical Medicine

Keppel Street, London, W.C.1. Tel.: Museum 3041

ENTOMOLOGY

- D. S. Bertram, Ph.D., *Professor of Entomology*
J. R. Busvine, Ph.D., D.Sc., *Reader in Entomology*

UNITED KINGDOM

HELMINTHOLOGY

J. J. C. Buckley, D.Sc., *Professor of Helminthology*

MYCOLOGY

I. G. Murray, M.B., Ch.B., D.T.M. & H., *Director, Sub-Department of Medical Mycology*

PARASITOLOGY

P. C. C. Garnham, M.D., D.Sc., D.P.H., *Professor of Medical Protozoology*

Queen Elizabeth College

Campden Hill Road, London, W.8. Tel.: Western 3704

BIOLOGY

J. B. Heale, B.Sc.: genetical aspects of strain specificity in the genus *Verticillium*
Mrs. D. O. Rawson, M.Sc.: functional morphology of trematode and cestode
parasites

J. G. Vaughan, Ph.D.: anatomy of oil seeds

MICROBIOLOGY

S. J. Pirt, Ph.D., *Reader and Head of Department*: mould fermentations and
plant tissue cell culture

NUTRITION

John Yudkin, M.A., Ph.D., M.D., *Professor and Head of Department*: effect of
diet on obesity in man; current patterns of food consumption in Britain and
their trends; factors determining food habits; studies in hypomagnesaemia;
effect of diet on digestive enzymes; effect of diet on fertility; synthesis of
nutrients by alimentary microflora

Miss A. M. Copping, M.Sc.: histochemical studies of nutritional deficiency

R. H. J. Watson, Ph.D.: relationships between nutrition and behaviour in the
rat

Royal Veterinary College

Royal College Street, London, N.W.1. Tel.: Euston 5321

ANATOMY, INCLUDING BIOLOGY, EMBRYOLOGY AND HISTOLOGY

J. McCunn, F.R.C.S., M.R.C.V.S., L.R.C.P., *Professor of Veterinary Anatomy*:
applied anatomy; radiological anatomy

B. G. Bowes, B.Sc., Ph.D.: morphogenesis in angiosperms

R. F. S. Creed, M.A.: reproductive studies in the wild red fox

F. S. Drury, M.R.C.V.S.: studies on periosteum; radiological anatomy

K. M. Dyce, B.Sc., D.V.M. & S., M.R.C.V.S.: functional anatomy of gastro-
intestinal tract; radiological anatomy

Mrs. N. P. Hodson, M.A., M.V.Sc., M.R.C.V.S.: innervation of male reproduc-
tive system

J. H. Jackson, M.A., B.Sc.: mammalian embryology; plant toxicology

R. H. A. Merlen, M.R.C.V.S.: applied anatomy; veterinary history

R. H. Nisbet, B.Sc., Ph.D.: neuro-muscular activity in mollusca; electron
microscopy of nervous system

I. L. Owen, B.Sc., Ph.D.: parasitic trematodes of fresh water fish

M. G. A. D. Scott, M.Sc.: nutrition and reproduction in male cat

ANIMAL HUSBANDRY AND VETERINARY HYGIENE

J. A. Laing, B.Sc., Ph.D., M.R.C.V.S.: *Professor of Animal Husbandry and
Veterinary Hygiene*: animal reproduction

UNITED KINGDOM

- D. A. Green, M.R.C.V.S.: food rate passage in pigs
A. E. Harrop, M.R.C.V.S.: sperm physiology; canine reproduction
E. C. Offord, M.R.C.V.S.: environmental studies of poultry houses
H. Ll. Williams, B.Sc.Agr., M.Sc., N.D.D.H.: growth and production in sheep

MEDICINE

- H. Burrow, M.R.C.V.S., D.V.S.M., *Professor of Veterinary Medicine*: veterinary state and preventive medicine
J. C. Greatorex, Ph.D., F.R.C.V.S.: bovine haematology
E. K. Price, M.R.C.V.S.: canine and feline medicine; cardiology
M. A. Richards, M.R.C.V.S.: canine nephritis
J. A. Rohrbach, B.Vet.Med., M.R.C.V.S.: piglet enteritis; ruminant indigestion
J. Stratton, M.R.C.V.S.: otitis externa in the dog and cat; laboratory aids to diagnosis
L. R. Thomsett, M.R.C.V.S.: canine and feline dermatology

PATHOLOGY

- R. Lovell, D.Sc., Ph.D., M.R.C.V.S., D.V.S.M. (Vic.), *Professor of Veterinary Bacteriology*: diseases of young calves
E. C. Appleby, B.Sc., Ph.D., M.R.C.V.S.: pathology, respiratory diseases of birds
W. P. Beresford-Jones, M.A., M.R.C.V.S.: parasitology
I. A. Cheyne, B.Vet.Med., M.R.C.V.S.: general veterinary pathology
E. Cotchin, D.Sc., M.R.C.V.S.: morbid anatomy
D. G. Harvey, M.B.E., B.Sc., Ph.D., F.R.I.C.: chemical pathology
A. H. S. Hayward, M.R.C.V.S.: pathology
Miss B. A. Hughes, B.Sc.: bacteriology; *Escherichia coli*
P. L. Ingram, B.Sc., Ph.D., M.R.C.V.S.: pathology of calf scours
J. N. Oldham, B.Sc., Ph.D.: parasitology
J. D. O'Shea, B.Vet.Med., Ph.D., M.R.C.V.S.: pathology
J. E. Smith, B.Sc., Ph.D., M.R.C.V.S.: normal bacterial flora; pasteurella
J. S. Wilkinson, B.Sc., Ph.D., M.R.C.V.S.: chemical pathology

PHYSIOLOGY AND CHEMISTRY

- E. C. Amoroso, M.B., B.Ch., B.A.O., B.Sc., Ph.D., I.I.A.R.C.V.S., F.R.C.S., F.R.S., *Professor of Veterinary Physiology*: placenta; reproductive physiology; physiology of the foetus
Mrs. M. I. Baxter, B.Sc.: electron microscopy of snail ganglia
F. R. Bell, B.Sc., Ph.D., F.R.C.V.S.: rumination; taste perception in ruminants; neurological correlates of behaviour
N. W. H. Bishop, M.A., Ph.D., Dip.Agr.Sc.Livestock: physiology of mammalian germ cells
E. G. C. Clarke, M.A., Ph.D., F.R.I.C.: properties of phytotoxins; micro-identification of alkaloids; microchemistry of poisons; reactions of steroids
C. A. Finn, B.Sc., M.R.C.V.S.: embryonic death; implantation of ova
A. E. Hawkins, B.Sc., Ph.D., A.R.C.S., F.Inst.P.: animal calorimetry and activity
F. A. Holton, M.A., Ph.D.: enzymology of intracellular respiration
P. M. Keen, B.V.Sc., M.R.C.V.S.: distribution of penicillins in the body and implantation
A. M. Lawn, B.Sc., M.R.C.V.S.: control of oesophageal motor activity; "ultra-structure of the placenta"
R. H. Marchant, B.Sc., Ph.D., A.R.I.C., A.R.P.S.: comparative studies on the metabolism of tryptophan and related substances
P. A. Mayes, B.Sc., Ph.D., M.I.Biol.: the metabolism of fat with special reference to ketone bodies

UNITED KINGDOM

- Miss B. M. Schofield, B.Sc., Ph.D.: the endocrine control of myometrial function
R. Shack, M.Sc.: dielectric constants at microwave frequencies
W. R. Shorthose, B.Sc.: composition of ovine foetal fluids and the maternal influence on prenatal growth
Miss S. A. Sowter, B.A.: chemistry of organo-metallic compounds

SURGERY AND OBSTETRICS

- C. Formston, F.R.C.V.S., *Professor of Veterinary Surgery*: general surgery and ophthalmology
G. H. Arthur, D.V.Sc., F.R.C.V.S.: veterinary obstetrics
W. R. Cook, M.R.C.V.S.: general surgery and diseases of the upper respiratory tract
R. C. Frost, M.R.C.V.S.: urology and fracture fixation
M. J. Iload, B.Vet.Med., M.R.C.V.S.: general surgery and perfusion therapy
G. C. Knight, F.R.C.V.S.: general surgery, radiology and ophthalmology
D. M. Redfern, B.Vet.Med., M.R.C.V.S.: general surgery
W. D. Tavernor, B.V.Sc., M.R.C.V.S.: general surgery and anaesthesia
L. C. Vaughan, F.R.C.V.S.: general surgery and orthopaedics

University College

Gower Street, London, W.C.1. Tel.: Euston 7050

BOTANY

- D. Lewis, D.Sc., F.R.S., *Quain Professor of Botany*: fungal and plant genetics
P. R. Bell, M.A.: fine structure of nucleus and cells, morphogenesis
Mrs. W. Sheila Burrage, B.Sc.: pollen proteins and incompatibility in plants
W. G. Chaloner, Ph.D.: palaeobotany
J. W. Cowan, B.Sc.: fungal genetics
L. Fowden, Ph.D.: amino acid metabolism
D. O. Gray, B.A.: amino acid metabolism
Miss Patricia M. Lievesley, B.Sc.: amino acid metabolism
P. J. Newbould, Ph.D.: ecology
P. J. Syrett, M.A.: intermediate metabolism
K. Taylor, B.Sc.: ecology
H. Tristram, B.Sc.: protein synthesis and enzymes
D. J. B. White, Ph.D.: plant anatomy
Mrs. Monica F. White, Ph.D.: physiology of fungi
D. Wilkie, Ph.D.: fungal genetics

BIOCHEMISTRY

- E. M. Crook, Ph.D., *Reader*: plant biochemistry
Miss Kathleen Law, Ph.D.: metabolism of wood-rotting fungi

GENETICS

- H. Grünberg, D.Sc., F.R.S., *Professor of Genetics*: inherited diseases in mammals

Wye College

Wye, Ashford, Kent. Tel.: Wye 401

AGRICULTURE

- W. Holmes, B.Sc.Agr., Ph.D., N.D.A.Hons., N.D.D., *Professor of Agriculture*: grazing management, nutrition of dairy cows
J. E. Duckworth, B.Sc., Ph.D.: pig breeding and selection
J. G. W. Jones, B.Sc., Ph.D.: grazing management

UNITED KINGDOM

AGRICULTURAL ECONOMICS

- G. P. Wibberley, B.Sc.Agr., Ph.D., M.S. (III.), *Reader in Agricultural Economics*: agricultural and land economics; comparative land use studies U.S.A., Gt. Britain and Netherlands
G. Allanson, M.A., M.Sc.: feed economy of dairy farms in England and Wales
R. Best, B.Sc., M.Sc.: land economics; agriculture in the land planning of Kent; land use in small settlements
E. S. Clayton, B.Sc., B.Com., Ph.D.: agrarian change in peasant farming in Kenya
R. R. W. Folley, B.Sc., B.Com.: horticultural production economics; Guernsey horticulture
J. B. Hardaker, B.Sc., M.Sc.: mechanization of cereals handling
A. R. Hunt, B.Sc.: production and marketing of English cherries
J. S. Nix, B.Sc., M.A.: farm buildings and farm management
I. G. Reid, B.Sc., Dip.Agr.: farm organization and management; management accounting and the whole farm business
J. D. Sykes, B.Sc., N.D.A., Dip.Agr.Econ.: systems of farming in S.E. England; economic problems in milk production; agricultural adjustment

BIOLOGICAL SCIENCES

- I. W. Selman, Ph.D., *Reader in Agricultural Botany*: plant pathology especially virus diseases
G. F. Pegg, Ph.D.: verticillium in tomato
G. J. Dowrick, Ph.D.: plant breeding and genetics
T. A. Hill, B.A.: gibberellins and plant virus infection
M. D. Hooper, Ph.D.: taxonomic studies in Gramineae

HOP RESEARCH

- Vacant: *Head of Department*
J. R. Coley-Smith, B.Sc., Ph.D.: pathology
R. A. Neve, B.Sc., Ph.D., Dip.Agr.Sc.: plant breeding
J. B. Roberts, M.Sc.: organic chemistry
F. C. Thompson, B.Sc., M.Sc.Agr., A.R.I.C.: manuring and field trials

HORTICULTURE

- H. W. Miles, M.Sc., D.Sc., *Professor of Horticulture*: horticultural entomology; special studies on orchard insects
E. H. Wilkinson, B.Sc., Ph.D.: pomology; studies on orchard fungi; gloeosporium species, especially those causing fruit rots
A. A. Jackson, B.Sc.: vegetable crop husbandry; plant improvement; crop successions under temporary protection
J. T. Sykes, B.Sc.: ornamentals; horticultural systematics; uses of mist techniques in horticultural plant propagation

PHYSICAL SCIENCES

- R. L. Wain, D.Sc., F.R.S., *Professor of Agricultural Chemistry*: chemical structure in relation to growth regulating activity and systemic fungicidal action; metabolism of growth regulators and systemic fungicides
G. P. Askew, B.Sc.Agr., B.Sc.: soil survey in Romney Marsh area
A. E. Flood, M.A., Ph.D.: studies on differentiation in fungal cells
J. L. Garraway, B.Sc., Ph.D.: synthesis of organic fungicides
Miss J. Ingram, B.Sc.Agr., M.Sc.: studies on assessment of soil structure
N. K. Jenkins, B.Sc., Ph.D.: poultry nutrition
M. A. Jones, B.Sc.: geology and petrology of the Glamfjord region, N. Norway
P. P. Rutherford, B.A., Ph.D.: metabolic changes accompanying the uptake of plant growth regulators

UNITED KINGDOM

- Miss M. S. Smith, B.Sc., Ph.D.: synthesis of plant growth regulators; resolution of optical isomers
E. W. Weston, B.Sc.: chemical changes in plant tissue following application of plant growth regulators
D. C. Whitehead, B.Sc., Ph.D.: naturally occurring plant growth regulators in soils

POULTRY

- A. H. Sykes, M.A., Ph.D.: reproductive physiology of the fowl
P. Hunton, B.Sc., M.Sc.: poultry genetics

A.R.C. UNIT OF PLANT GROWTH SUBSTANCE AND SYSTEMIC FUNGICIDES, see page 17
A.R.C. UNIT OF PLANT MORPHOGENESIS AND NUTRITION, see page 18

MANCHESTER UNIVERSITY

Manchester 13. Tel.: Ardwick 3333

Agricultural Economics

The Department is engaged on research and advisory work in agricultural economics within the province and participates in national investigations required by the Ministry of Agriculture, Fisheries and Food. Research studies cover farm management, capital and credit in agriculture, agricultural labour, food supplies and food consumption, food supplies and prices and agricultural development and productivity.

W. J. Thomas, M.Sc., *Reader in Agricultural Economy and Head of Department*
J. Stewart, B.Sc.Agr., *Director of Farm Management Advisory Work*

Lecturers and Assistant Lecturers

- K. G. Cowling, B.Sc., Ph.D.
T. W. Fletcher, M.Sc.
G. W. Furness, B.Sc.Agr.
T. W. Gardner, M.A., Ph.D.
T. Kempinski, M.A.
M. Marks, M.A.Econ.
R. J. Perkins, M.A.

Agricultural Economists

- J. C. Holt, B.A.Econ.
D. O. Jones, B.A.Econ.
Mrs. D. I. Richardson, B.A.
W. W. Richardson, B.A.
Miss F. R. Walker, B.Sc.

Botany

- C. W. Wardlaw, Ph.D., D.Sc., M.Sc., F.R.S.E., *Professor of Botany*: morphogenesis; diseases of tropical crops
J. Colhoun, B.Sc., M.Agr., Ph.D., D.Sc., D.I.C., F.I.S., *Professor of Cryptogamic Botany*: mycology and plant pathology, especially diseases of brassicae, cereals, fruit and flax
A. Allsopp, M.Sc., Ph.D.: developmental morphology
R. D. Butler, B.Sc., Ph.D.: cytology
Miss M. G. Calder, B.Sc., Ph.D.: paleobotany
Miss E. G. Cutter, B.Sc., Ph.D.: experimental morphology
K. J. Dormer, B.Sc., Ph.D.: taxonomy
J. N. Hartshorne, B.Sc., Ph.D.: genetics; sex ratio in dioecious plants
P. Newton, B.Sc., Ph.D.: growth analysis
D. Park, M.Sc., Ph.D.: biology of soil fungi and fungal morphogenesis

UNITED KINGDOM

- R. C. Pecket, B.Sc., Ph.D.: flower pigmentation: phenolic compounds
E. W. Simon, M.A., D.Phil.: plant respiration and fermentation
D. L. Smith, B.Sc., Ph.D.: paleobotany
J. H. Tallis, B.Sc., Ph.D.: plant ecology
B. Truelove, B.Sc., Ph.D.: organic acid metabolism
L. G. G. Warne, M.Sc., Ph.D.: vegetable and fodder crops; crop ecology

Zoology

- H. G. Cannon, M.A., Sc.D., D.Sc., M.Sc., F.R.S., *Professor of Zoology and Director of the Zoological Laboratories*
R. Dennell, M.Sc., D.Sc., F.L.S., *Professor of Experimental Zoology*
F. J. Brown, M.Sc., *Assistant Director of the Zoological Laboratories*
R. R. Askew, B.Sc.
J. G. Blower, M.Sc.: ecology
M. E. G. Evans, B.Sc., Ph.D.
P. D. Gabbett, B.Sc., Ph.D.
J. N. Hartshorne, B.Sc., Ph.D.: genetics
E. J. Iles, B.Sc., Ph.D.
J. H. Kennaugh, M.Sc.: experimental zoology
Miss E. D. Peel, M.Sc.
E. J. Popham, Ph.D., D.Sc., A.R.C.S.
M. P. Thomas, B.Sc., Ph.D.

UNIVERSITY OF NOTTINGHAM

School of Agriculture

Sutton Bonington, Loughborough, Leics. Tel.: Kegworth 386

AGRICULTURE

- J. D. Ivins, M.Sc., Ph.D., *Professor of Agriculture*: grassland evaluation and utilization; physiology of herbage growth; crop agronomy
P. M. Bremner, B.Sc., M.Sc.: crop agronomy
G. E. Lamming, B.Sc., M.Sc., Ph.D., *Reader in Animal Physiology*: animal reproduction and growth
G. A. Lodge, B.Sc., Ph.D.: nutrition of pigs
C. G. Payne, B.Sc., Ph.D.: poultry nutrition and environment

AGRICULTURAL ECONOMICS

- D. K. Britton, M.A., B.Sc.Econ., *Professor of Agricultural Economics*: studies of the changing structure of the agricultural economy in the United Kingdom and in other European countries; small farm problems
K. A. Ingersent, B.Sc., M.Sc.: economics of irrigation of field crops; changes in regional patterns of potato production in England and Wales
G. E. Jones, B.A.: rural sociology in relation to British agriculture; the diffusion of innovations and technical improvements among British farmers
R. B. Jones, M.Sc.: economics of beef enterprises; multiple ownership of holdings
W. S. Senior, B.Sc.Agr.: economics of poultry enterprises
T. W. D. Theophilus, B.Sc.: management problems in relation to scale of farm enterprises
T. K. Warley, B.Sc.Hort., M.Sc.: British agriculture and the Common Market; economic aspects of the marketing of eggs
R. O. Wood, M.Sc.: economics of milk production

UNITED KINGDOM

AGRICULTURAL SCIENCES

Agricultural Botany

- F. L. Milthorpe, M.Sc.Agr., Ph.D., D.I.C., *Professor of Agricultural Botany*: growth of leaves; growth of the potato; factors influencing the transpiration rate; host/pathogen relationships
K. W. Dent, B.Sc., Ph.D.: competition between grasses
Miss Miriam M. Edwards, M.Sc., Ph.D.: the germination of seeds of charlock
Sinapis arvensis, L.
B. G. Lewis, B.Sc.: the mycotrophic habit in grasses; competition between soil fungi
W. J. Whittington, B.Sc., Ph.D.: polygenic analysis; cytology and growth characteristics of *Festulolium tiliaceum* (Huds.); role of boron in nutrition

Agricultural Chemistry

- E. G. Hallsworth, B.Sc., Ph.D., A.R.I.C., *Professor of Agricultural Chemistry*: studies of pedogenesis; factors of profile development; biochemistry and nutrition of the legumes, with particular reference to the effects of trace nutrients on nitrogen fixation; effect of aluminium and other factors of soil acidity complex on plant growth
P. E. Cansfield, B.Sc.: influence of copper supply on polyphenol oxidases of legumes
I. R. Cowan, M.Sc.: micro-meteorology; heat and water balance in field crops
D. V. Crawford, M.A., B.Sc., Ph.D.: biochemical aspects of podzolization; studies on formation of ferro-manganiferous concretions
D. Lewis, M.Sc., M.A., Ph.D., *Reader*: ruminant physiology and digestion; rumen metabolism, with particular reference to digestion of protein and carbohydrate; metabolic disorders related to rumen function; effect of energy content of diet on amino-acid requirements for growth and production of pigs and poultry
E. R. Ling, M.Sc., Ph.D., A.R.C.S., F.R.I.C.: acid-base equilibria concerned in caseinate-phosphatic complex
G. Norton, B.Sc., Ph.D.: effects of aluminium excess and iron deficiency on biochemical reactions of plant tissues
I. F. Taylor, B.Sc.: X-ray analysis of clay minerals; reactions involved in formation of soil structure

Agricultural Microbiology

- Microbial growth for fat/protein; sub-lethal heat treatment of micro-organisms; studies on the Corynebacteriaceae family; nutrition of *Rhizobium* spp. and nutritional grouping of soil microflora.
M. Woodbine, M.Sc., Ph.D., F.R.I.C., M.I.Biol., *Reader in Microbiology*
A. Seaman, B.Sc., Ph.D., M.I.Biol.

Agricultural Zoology

- P. W. Murphy, B.Agr.Sc., D.Phil.: fauna of leaf litter; distribution and biology of soil-inhibiting mites (Acarina) and micro-arthropods, and their role in the break-down of organic matter; ecological plasticity of soil Acarina; biological characterization of 'humus forms' with particular reference to the animal component; Oribatid mites associated with fruit-trees
J. Y. Ritchie, B.Sc.Agr.: studies of the Aphididae with particular reference to infestation and movement

Food Science

- E. J. Rolfe, B.Sc., F.R.I.C.: biophysics and biochemistry of dehydration
M. Stein, J.U.Dr., B.Sc., Ph.D.: biophysics and biochemistry of dehydration

UNITED KINGDOM

HORTICULTURE

- J. P. Hudson, M.B.E., G.M., B.Sc.Hort., M.Sc., Ph.D., N.D.H., *Professor of Horticulture*: effects of different water-regimes and salt concentrations on the growth and yield of plants; factors affecting regeneration of plants, especially from roots; control of environment for experimental work with plants and effects on growth; possibilities of affecting responses of plants to particular weather conditions
Miss Winifred M. Dullforce, M.Sc., N.D.H.: analysis of the growth of plants in relation to environmental factors and the effects of transplanting
W. Heydecker, B.Sc.Hort., M.Sc., Ph.D., N.D.H.: environmental effects on the establishment of vegetable seedlings
Miss Margaret E. Marston, B.Sc., M.Sc.Hort., Ph.D., N.D.H.: vegetative propagation of plants, with special reference to regeneration from leaf cuttings

UNIVERSITY OF OXFORD

Department of Agriculture

Parks Road, Oxford. Tel.: Oxford 57245

- G. E. Blackman, M.A., F.R.S., *Head of Department and Sibthorpius Professor of Rural Economy*
P. H. Nye, M.A., B.Sc., *Reader in Soil Science*

UNIVERSITY DEMONSTRATORS AND SENIOR RESEARCH OFFICERS

- J. M. Barry, M.A., D.Phil.: animal biochemistry
P. H. T. Beckett, M.A., D.Phil.: pedology; thermodynamics in soil
J. R. Clarke, M.A., D.Phil.: animal physiology
J. L. Harley, M.A., D.Phil.: plant nutrition and mycorrhiza
B. C. Loughman, M.A., Ph.D.: plant biochemistry and physiology
R. L. Lucas, M.A., Ph.D.: plant pathology and microbiology
R. P. Martin, M.A., D.Phil.: physics—isotopes
G. B. Masefield, M.A.: tropical agriculture
D. C. Smith, M.A., D.Phil.: plant physiology
M. H. R. Soper, M.A., O.B.E.: crop husbandry

A.R.C. Unit of Experimental Agronomy, see page 16

Agricultural Economics Research Institute

Parks Road, Oxford. Tel.: Oxford 57775

- Colin Clark, M.A., *Director*
G. R. Allen, M.A.: economics of marketing, supplies and prices in developed and underdeveloped countries
A. G. Antill, M.A.: economic statistics
W. H. Beckett, M.A.: credit, co-operation and agricultural development of overseas territories
H. Frankel, M.A.: state intervention in agriculture
M. R. Haswell, M.A.: production and consumption patterns of primitive and low income agricultural communities
G. P. Hirsch, M.A.: rural social organization
K. E. Hunt, M.A.: supplies and prices of agricultural commodities
G. T. Jones, M.A.: analysis of supply and demand
A. H. Maunder, M.A.: economics of farm organization
L. Moore, M.A.: international trade in agricultural commodities
G. H. Peters, M.Sc.: economic growth; location; land economics
G. J. Williams, B.A.: educational planning in agricultural areas

UNITED KINGDOM

Department of Forestry, Commonwealth Forestry Institute

South Parks Road, Oxford. Tel.: Oxford 55757, 57891

- Prof. M. V. Laurie, O.B.E., M.A., *Director*: tropical forestry; forestry and land use; forest policy
L. Chalk, M.A., D.Phil. (Oxon.): systematic anatomy of wood; anatomical basis of variation in structure and properties of wood; identification of timbers
G. W. Dimbleby, B.Sc., M.A., D.Phil. (Oxon.): ecological study of moorland and heathland areas in Britain with special reference to soil development
T. E. Edwardson, B.Sc., M.A. (Oxon.), R.Sc.For. (Edin.): methods of measurement of trees and woods
W. A. Gordon, M.A., Dip.Anth. (Oxon.), Bar-at-Law (Lond.): forest law; Colonial forestry
W. R. C. Handley, M.A. (Oxon.), Ph.D. (Leeds): investigations on the activities of micro-organisms in the breakdown of vegetable debris
A. C. Hoyle, B.Sc., M.A. (Oxon.): taxonomy and ecology of trees and shrubs, mainly of tropical Africa, and particularly the revision of the genus *Brachystegia*
E. W. Jones, M.A. (Oxon.), Ph.D. (Cantab.): ecology and silviculture of forest trees in Britain: tropical African forests
L. Leyton, M.A. (Oxon.), Ph.D. (Leeds): mineral nutrient relations of forest trees; influence of certain environmental factors on the activity and growth of tree roots; water relations of the forest
J. J. MacGregor, B.Litt., M.A. (Oxon.), B.Sc. (Glas.), M.S. (Wis.): timber resources; supply and demand trends; prices; economic aspects of forest policy; survey of costs and prices in private forestry; work science; influence on efficiency of size of trees; economics of scale in timber conversion
F. C. Osmaston, M.A. (Oxon.): forest management and working plans; silvicultural systems and their practices; aerial survey
C. J. W. Pitt, M.A. (Oxon.), B.Sc. (Grahamstown): forest utilization and engineering
R. E. C. Reynolds, B.Sc., Ph.D. (Lond.): water relations of the forest
B. T. Styles, M.A., D.Phil. (Oxon.): forest botany
G. H. Thompson, B.Sc., M.A. (Oxon.): biological studies of woodwasps of the genus *Xiphydria*
T. W. Tinsley, B.Sc. (Dunelm), Ph.D. (Lond.): forest pathology
F. White, M.A. (Oxon.), M.A. (Cantab.): taxonomy and ecology of tropical trees and shrubs, mainly from Africa (particularly Northern Rhodesia); revision of the Ebenaceae

READING UNIVERSITY

Faculty of Agriculture

Tel.: Reading 81771

AGRICULTURE

- A. N. Duckham, C.B.E., M.A., Dip.Agr. (Cantab.), *Professor of Agriculture*: comparative agriculture; farm operations
D. M. Allen, B.Sc., Ph.D.: animal husbandry, including sheep breeding and growth studies
F. M. Battin, M.A., A.M.I.E.E.: applications of electricity and electronics to agriculture
J. N. Dominy, F.R.I.C.S., L.R.I.B.A.: design and layout of farmsteads
S. Fox, M.A., Dip.Agr. (Cantab.): animal and poultry husbandry, including growth studies
J. A. C. Gibb, M.A., M.Sc.: farm materials handling
P. M. Harris, M.Sc., B.Sc.: crop production, including the role of organic matter
D. H. Lloyd, B.Sc.: farm management, including work organization

UNITED KINGDOM

- K. E. Morgan, B.Sc., N.D.Agr.E.: tractor design; farm automation
T. R. Morris, B.Sc.: poultry science, including use of artificial light
J. Pearce, Ph.D., Dip.Agr. (R'dg.): farm management, including beef production
R. S. Tayler, B.Sc.: crop husbandry and grassland irrigation

AGRICULTURAL BOTANY

- A. H. Bunting, M.Sc., D.Phil., *Professor of Agricultural Botany*: crop physiology and agronomy; ecology applied to agricultural problems
Miss Phyllis M. Cartwright, B.Sc., Ph.D.: growth physiology of crops; physiology of root nodule formation in legumes
D. S. H. Drrennan, B.Sc., Ph.D.: crop physiology in relation to agronomy and plant breeding
J. K. Jones, B.Sc., Ph.D.: cytogenetics and plant breeding, especially in cereals and fruits
H. Owen, B.Sc., Ph.D., A.I.C.T.A.: physiology of parasitism in fungi
G. D. Rowley, B.Sc.: taxonomy and evolution in succulents and Rosaceae
R. W. Snaydon, B.Sc., Ph.D.: physiological basis of ecotypic variation in grasses and clovers
D. Snow, B.Sc., Ph.D.: physiology of pathogenic fungi; spore germination; root nodule formation in legumes
J. S. I. Waldie, B.Sc., Dip.Agr. (Edin.): grassland ecology

Unit of Biometry

- R. N. Curnow, B.A., Ph.D.: research and consultation in the application of mathematical methods to biological problems; quantitative genetics

AGRICULTURAL ECONOMICS

- 7 Redlands Road, Reading. Tel.: Reading 81779
Edgar Thomas, C.B.E., B.Litt., B.Sc., *Professor of Agricultural Economics*
L. G. Bennett, Ph.D., Dip.Hort.: economics of pre-packing fruit and vegetables; consumer demand and buying habits for horticultural produce
G. B. Bisset, B.Sc., M.S.: index of farming productivity and profitability
R. S. Cook: economics of milk production
I. B. Gardiner, B.Sc.Agr.: economics of auxiliary farm services
A. K. Giles, B.Sc.Econ.: use of budgeting control in farm management
A. H. Gill, B.Sc.: depreciation and obsolescence of farm machines
A. Harrison, M.A., M.Sc.: capital formation in farming; mutton and lamb prices
C. A. Jewell, B.Sc.: economic, social and cultural developments in a rural parish
E. M. Low, M.A.: economics of the poultry enterprise
J. S. Marsh, B.A.: development in European trade in farm products
F. D. Mills, B.A., M.S.: trade union organization in British agriculture
Miss Anne C. Newlyn, B.A.: seventeenth century agriculture
D. S. Thornton, Ph.D., B.Sc.Agr., B.A.: economics of pig production; decision making in farming
R. H. Tuck, M.A.: economic theory of long-term agricultural development

DAIRYING (and Food Science)

- E. L. Crossley, B.Sc., F.R.I.C., *Professor of Dairying*: technology and bacteriological properties of evaporated milk, dried milk and cream
E. C. Apling, B.Sc., F.R.I.C.: flour milling and baking processes
Miss Margaret I. W. Benjamin, B.Sc.Dairying: microbiological control of food manufacture
J. Rothwell, B.Sc.Dairying: technology and physical properties of cream and of ice cream
R. Scott, B.Sc.Agr., N.D.A., N.D.D.: technology of heat treatment and cheese-making processes

UNITED KINGDOM

HORTICULTURE

- O. V. S. Heath, D.Sc., F.R.S., *Professor of Horticulture*: developmental physiology and growth substances; photosynthesis, respiration and stomatal physiology; competition between ground-covering ornamentals (and weeds)
G. P. Harris, Ph.D.: developmental physiology of glasshouse flower crops; initiation of roots and buds
Mrs. D. Prue, Ph.D.: developmental physiology; effects of wavelength of light
H. F. van Emden, Ph.D.: interrelations of insects and plants

MICROBIOLOGY

- B. C. J. G. Knight, D.Sc., *Professor of Microbiology*: microbial nutrition; microbial physiology in relation to classification
Miss E. Billing, Ph.D.: bacteriophages active against plant pathogenic and other *Pseudomonas* species
H. P. Charles, Ph.D.: microbial genetics; morphogenesis in Algae
M. T. Heydeman, B.A.: microbial utilization of alkanes
R. M. Keddie, Ph.D.: the physiology and classification of coryneform bacteria and of lactobacilli
R. W. A. Park, Ph.D.: microacrophic vibrios; life cycles of bacteria
Miss P. M. F. Shattock, Ph.D.: serological and physiological studies on streptococci
L. J. Zatman, Ph.D.: microbial physiology, especially the metabolism of one-carbon compounds and the biosynthesis of pyridine nucleotides

PHYSIOLOGICAL CHEMISTRY

- C. Tyler, D.Sc., Ph.D., F.R.I.C., *Professor of Physiological Chemistry, Dean of the Faculty*: mineral metabolism of poultry and egg shell characteristics
D. A. Balch, B.Sc.Agr., Ph.D.: organic matter of egg shells
F. H. Grimbleby, B.Sc., Ph.D., A.R.I.C.: heat-stability of milk
K. A. Hassall, B.Sc., Ph.D., A.R.I.C.: mode of action of herbicides
T. G. Taylor, M.A., Ph.D.: physiology and biochemistry of reproduction in the laying bird
A. Wild, B.Sc., Ph.D., A.R.I.C.: soil organic phosphorus; availability of soil phosphorus to plants

A.R.C. UNIT OF FLOWER CROP PHYSIOLOGY, see page 17

UNIVERSITY OF SHEFFIELD

Western Bank, Sheffield 10. Tel.: Sheffield 78555

Botany

- A. R. Clapham, M.A., Ph.D. (Cantab.), F.R.S., *Professor*: ecology and taxonomy of British plants
J. G. Boswell, D.Sc. (Lond.), *Reader in Plant Physiology*: oxidase systems in the metabolism of storage tissue
D. J. Anderson, B.Sc. (Nott.), Ph.D. (Wales): the statistical study of pattern in vegetation
A. Booth, B.Sc., Ph.D. (Manc.): development in physiology with particular reference to the role of growth-substances
J. P. Grime, B.Sc., Ph.D. (Sheff.): the experimental ecology of calcicoles and calcifuges
I. H. Rorison, M.A., D.Phil. (Oxon.): experimental ecology with special reference to phosphorus and aluminium uptake
J. Webster, B.Sc., Ph.D. (Lond.), *Senior Lecturer*: the ecology and taxonomy of fungi

UNITED KINGDOM

H. W. Woolhouse, B.Sc. (R'dg.), Ph.D. (Adel.): experimental ecology, with special reference to nitrogen nutrition

Zoology

- I. Chester Jones, D.Sc., Ph.D. (Liv.), *Professor*: form and function of the adrenal gland throughout the vertebrates; movement of water and electrolytes in fish
E. T. B. Francis, B.Sc. (Lond.), Ph.D. (R'dg.), *Reader in Vertebrate Zoology*: parasitology; water movement in reptiles
D. Bellamy, B.Sc. (Sheff.), D.Phil. (Oxon.): metabolism of steroids in tissues
F. J. G. Ebling, M.Sc., Ph.D. (Brist.), *Senior Lecturer*: experimental dermatology; influence of hormones on skin and hair; marine ecology
K. C. Highnam, M.Sc. (Manc.), Ph.D. (Sheff.): insect endocrinology
J. D. Jones, B.Sc. (Lond.): physiology of respiration in invertebrates, especially molluscs
O. Lusis, Mag.Rer.Nat. (Riga), Ph.D. (Sheff.): histology and histochemistry of reproductive changes in molluscs and insects
J. G. Phillips, B.Sc., Ph.D. (Liv.): adrenocortical hormones; extra-renal excretion of water and electrolytes in birds
F. Segrove, B.Sc., Ph.D. (Sheff.), *Senior Lecturer*: marine ecology

A.R.C. Unit of Microbiology, see page 17

UNIVERSITY OF SOUTHAMPTON

Highfield, Southampton. Tel.: Southampton 56331

Botany Department

- W. T. Williams, Ph.D., D.Sc., *Professor*: whole-plant physiology, multivariate methods
G. R. Lane, B.Sc., Ph.D., *Senior Lecturer*: cytology, radiation biology
Miss J. M. Lambert, M.A., Ph.D., *Reader*: ecology
J. G. Manners, M.A., Ph.D.: plant pathology
A. Myers, B.Sc., Ph.D.: plant biochemistry
T. C. Whitmore, M.A., Ph.D.: tropical taxonomy

Zoology Department

- J. E. G. Raymont, B.Sc., A.M. (Harv.), D.Sc., *Professor*
M. J. Delany, M.Sc.: ecological studies on small mammals
R. E. Hall, B.Sc., A.R.C.S.: general entomology
A. R. Hockley, B.Sc.: helminth parasites

UNIVERSITY COLLEGE OF WALES

Aberystwyth. Tel.: Aberystwyth 346

Agriculture

ANIMAL HUSBANDRY

- J. E. Nichols, M.Sc., Ph.D., F.R.S.E., *Professor*: agriculture; ecological aspects of sheep husbandry; genetics and environmental factors affecting production in dairy cattle; shelter/exposure relationships and their effects on animal behaviour and production, especially in sheep
Mrs. A. Davies, M.Sc.: dairy microbiology
J. L. Lees, B.Sc.: agriculture: ecological aspects of sheep husbandry; variations in the natural reproductive cycle of ewes; genetic and environmental factors affecting production in dairy cattle
John Lewis, M.Sc., N.D.D., *Director of the College Dairy*: determination of efficiency and operating cost of various types of farm dairy equipment; tests on the effectiveness of various methods of sterilizing dairy utensils

UNITED KINGDOM

- J. B. Owen, B.Sc., Ph.D.: agriculture; nutrition and management levels affecting production in sheep; food intake, and milk yield of pregnant and lactating ewes
K. B. Sinclair, M.V.Sc., Ph.D., M.R.C.V.S.: animal physiology and animal health; general aspects of sheep husbandry, with special reference to parasitism and the development of host reactions

CROP HUSBANDRY

- W. Ellison, B.Sc., Ph.D., *Professor*: agriculture; marginal land problems; lys in upland areas; pasture improvement
R. S. Edwards, B.Sc., Ph.D.: agriculture, effects of seed-bed tilth on establishment and yield of crop plants; frost heaving of cultivated soils; measurement of wind borne salt and its effects on crop plants
J. L. Hammerton, B.Sc., Ph.D.: agriculture; use of herbicides in grassland improvement; weed control in kale; ecological and physiological studies of weeds of genus *Polygonum*
I. B. Warboys, B.Sc.: agricultural machinery; mechanization of upland farms; improved haymaking techniques

Agricultural Botany

- P. T. Thomas, B.Sc., Ph.D., *Professor*: cytology of crop plants
J. N. Davies, B.Sc.: competition studies in cereals
A. Durrant, B.Sc., Ph.D.: biometrical genetics; studies on genotype environment interactions
E. Griffiths, M.Sc., Ph.D.: plant pathology, microbiology, ecology of soil micro-organisms with particular reference to organic matter decomposition and soil structure
D. B. James, M.Sc.: the nature and inheritance of physiological factors which influence the distribution of grasses
Miss B. Mann, M.A., Ph.D.: host/parasite relations in wilt diseases
H. Rees, B.Sc., Ph.D.: genetic control of chromosome behaviour; microspectrometry of chromosomes; genetics of physiological variation in cereals

Agricultural Biochemistry

- T. W. Goodwin, D.Sc., F.R.I.C., *Professor*: vitamin biosynthesis; photosynthesis; seed germination
W. M. Ashton, B.Sc., Ph.D., F.R.I.C.: animal nutrition
B. H. Davies, B.Sc., Ph.D., A.R.I.C.: plant carotenoids
E. I. Mercer, B.Sc., Ph.D., A.R.I.C.: plant sulpholipids and plant sterols

Agricultural Economics

- E. F. Nash, M.A., *Professor*: agricultural economics (general); competitive position of British agriculture
R. Crotty, B.Sc.Econ.: the volume and structure of Irish agriculture production
M. H. Dummer, B.A.: economics of hill farming; economics of potato production; economics of sheep farming (hill and lowland flocks)
D. H. Evans, B.Sc., M.Sc.: economic changes on a sample of Welsh farms over the last ten years; agriculture and economic development in Southern Europe
G. Hallett, M.A.: problems of agricultural policy
P. G. James, M.A., D.Agr.Sc.: an economic assessment of land use in mid-Wales under forestry and agriculture
M. B. Jawetz, M.Sc.: input-output relationships in milk production; organization of intensive small dairy farms
W. D. Jones, M.Sc.: economics of egg and table poultry production; economics survey of store-raising farms
J. R. E. Phillips, M.A.: economics of the dairy industry

UNITED KINGDOM

Welsh Plant Breeding Station—*see State-aided Research Institutes*,
page 71

UNIVERSITY COLLEGE OF NORTH WALES

Bangor, Caernarvonshire

Department of Forestry

Tel.: Bangor 3641

- E. C. Mohhs, O.B.E., M.A., B.Sc., *Professor*: natural regeneration of exotic conifers; establishment and development of various species under conditions of exposure and high elevation
C. G. Dohhs, Ph.D., A.R.C.S.: mycology; biology of soil microfungi; dendrology; growth rings of trees
G. K. Elliott, B.Sc., M.F., A.I.W.Sc.: utilization; timber technology; timber-silviculture relations
E. R. Huggard, M.A., B.A.I., A.M.I.C.E.: application of formulae to forest works; forest machinery application and development
D. Kinloch, B.Sc.: forest management
T. H. Owen, B.Sc.: afforestation; conversion of derelict woodlands

Department of Zoology

Tel.: Bangor 3225

- F. W. Rogers Brambell, B.A., D.Sc., F.R.S., *Professor*
Mrs. D. M. Alcock, B.Sc.: antibody production in Amphibia
R. McN. Alexander, M.A., Ph.D.: the swimbladder of the cyprinid fish; viscoelastic properties of biological materials
L. H. Jackson, B.Sc.: marine biology
W. C. Jones, M.A., Ph.D.: physiology and growth of sponges
T. B. Reynoldson, D.Sc.: taxonomy and ecology of freshwater triclad
N. W. Runham, Ph.D.: histochemistry of molluscs

School of Agriculture

Tel.: Bangor 2271

AGRICULTURE

- I. A. M. Lucas, B.Sc., M.S., *Professor*: pig nutrition
W. Brown, B.Sc., M.S.: shelter for grazing animals
G. M. Davies, B.Sc., Ph.D.: spring grazing of winter sown cereals
J. H. Watson, B.Sc., Ph.D.: pig selection; artificial insemination of pigs; biochemical genetics of sheep
G. L. Williams, B.Sc., M.S.: breeding and nutrition studies with hill sheep

AGRICULTURAL BIOCHEMISTRY AND SOIL SCIENCE

- W. C. Evans, M.Sc., Ph.D., F.R.I.C., *Professor*: biochemistry; plant constituents and animal health; metabolism of soil micro-organisms
R. F. E. Axford, M.A., Vet.M.B., M.R.C.V.S.: mineral metabolism in ruminants
R. I. Davies, M.Sc., A.R.I.C.: nutrient status of soils; epidemiological study of cancer and soils
Mrs. I. Antice Evans, Ph.D.: haematology and tissue culture; cattle bracken poisoning
R. A. Evans, M.Sc., A.R.I.C.: nutrition and digestive enzymes
I. J. Graham-Bryce, M.A., B.Sc., D.Phil.: movement of ions
F. Smithson, D.Sc.: microscopic studies of rocks, soils and vegetation (phytoliths)
A. J. Thomas, M.A., Ph.D.: cattle bracken poisoning

UNITED KINGDOM

AGRICULTURAL BOTANY

- J. L. Harper, M.A., D.Phil., *Professor*: evolutionary ecology; seed—soil relationships; plant competition
A. Bradshaw, M.A., Ph.D.: evolution in plant populations
Miss M. J. Mence, M.A.: microbial causes of seedling mortality
D. Wynn Parry, M.Sc.: opaline silica deposits in the Gramineae
J. D. Quinlan, B.Sc.: physiology of grain yield in wheat; translocation of C¹⁴ assimilates
G. R. Sagar, M.A., D.Phil.: translocation of C¹⁴ compounds; weed control; population dynamics

AGRICULTURAL AND FOREST ZOOLOGY

- J. Hobart, B.Sc., *Senior Lecturer in Charge*: soil faunal studies, forest pests
J. M. Cherrett, Ph.D.: terrestrial anthropod ecology with special reference to Araneae and Coccoidea
J. B. Ford, Ph.D.: nutrition and metabolism in insects
I. V. Herbert, B.Sc., M.S.: nutrition of Trypanosomatidae and of Nematoda parasitic in domestic stock
Mrs. M. J. Morgan, M.Sc.: biology of Curculionidae and Chironomidae

A.R.C. Unit of Embryology—see page 16

STATE-AIDED RESEARCH INSTITUTES

Research Institute (Animal Virus Diseases)

Pirbright Surrey. Tel.: Worplesdon 2441-5. 'Grams: Research, Pirbright

- Ian A. Galloway, D.Sc., M.R.C.V.S., *Director*
J. B. Brooksby, D.Sc., Ph.D., M.R.C.V.S., *Deputy Director*

BIOCHEMISTRY

- F. Brown, M.Sc., Ph.D., *Head of Section*: synthesis of virus components in the cell
Miss J. Crick, M.Sc.: interference phenomena
D. N. Planterose, B.Sc., Ph.D.: sub-cellular localization of virus components

BIOPHYSICS

- C. J. Bradish, B.Sc., Ph.D., A.I.P., *Head of Section*: electron microscopy and light scattering
Miss H. E. N. Ferrier, B.Sc.: antigen antibody reactions
C. D. Johnson, M.Sc.: irradiation of viruses
R. E. Warrington, B.Sc.: density gradient studies in virus systems

GENETICS

- C. R. Pringle, B.Sc., Ph.D., *Head of Section*: selection of mutants—recombination

PATHOLOGY

- H. Platt, M.V.Sc., Ph.D., M.R.C.V.S., *Head of Section*: cytology of virus infection
A. L. Jones, M.Sc., Ph.D.: virus growth in organ cultures

SEROLOGY AND WORLD REFERENCE LABORATORY

- J. B. Brooksby, D.Sc., Ph.D., M.R.C.V.S., *Head of Section*: serological specificity in viruses
J. Davie, B.Sc., M.R.C.V.S.: classification of sub-types
Miss J. Delf, B.Sc.: world survey of virus types

UNITED KINGDOM

TISSUE CULTURE

P. B. Capstick, B.V.M.S., M.R.C.V.S., *Head of Section*: growth of virus in primary cell cultures and cell strains
Miss D. L. Stewart, B.Sc.: virus assay in tissue culture

VACCINES

Attenuated Vaccine

H. H. Skinner, M.R.C.V.S., *Head of Section*: development of attenuated strains
R. Burrows, B.Sc., M.R.C.V.S.: attenuation of virus in tissue culture
W. A. Geering, B.V.Sc.: tests of attenuated strains in cattle

Inactivated Vaccine

N. St. G. Hyslop, B.V.Sc., M.R.C.V.S., D.T.V.M., *in charge*: vaccine control methods; aerosols in infection
A. W. Morrow, M.A., B.Sc.: large scale vaccine production

Serum Assay

G. N. Mowat, M.R.C.V.S., *in charge*: vaccine testing and development of attenuated strains
Mrs. S. P. Carter, B.Sc.: antibody assay

East Malling Research Station

East Malling. Tel.: West Malling 3033

F. R. Tubbs, C.B.E., M.Sc., Ph.D., A.R.C.S., D.I.C., F.L.S., *Director*
T. N. Hoblyn, O.B.E., Dip.Hort., *Adviser to Director*
R. V. Harris, D.Sc., A.R.C.S., D.I.C., *Adviser to Director*
H. B. S. Montgomery, B.A., Ph.D., D.I.C., *Assistant to Director*

ENTOMOLOGY

G. H. L. Dicker, Ph.D., A.R.C.S., *Head of Section*: aphids and other fruit pests
J. B. Briggs, B.Sc.Hort., M.Sc.: insect and mite studies in relation to breeding resistant varieties of fruit
J. R. Chiswell, Ph.D.: codling moth; leaf hoppers; pollinating insects
Miss E. Collyer, Ph.D.: fruit tree red spider mite; factors influencing populations of apple-grass aphid
Miss M. Gratwick, M.Sc., D.I.C.: laboratory tests with insecticides
R. C. Muir, B.Sc.: integration of chemical and biological control
R. S. Pitcher, Ph.D., Dip.Agr., Dip.Ento.: nematodes associated with fruits

FRUIT NUTRITION

D. W. P. Greenham, M.A., Ph.D., *Head of Section*: mineral nutrition of fruit plants; manuring and soil management
M. Allen, Ph.D.: uptake from foliar sprays; seasonal changes in mineral content of leaves
Miss A. V. Delap, B.A., B.Sc., Ph.D.: sand culture; nitrogen, seasonal uptake
Miss E. M. Ford, Ph.D., A.R.C.S.: magnesium nutrition
J. E. Goode, B.Sc.: water relationships; nitrogen; soil studies

FRUIT STORAGE INVESTIGATIONS

(in collaboration with Ditton Laboratory)

H. B. S. Montgomery, B.A., Ph.D., D.I.C., *Head of Section*: effect of field factors
R. O. Sharples, B.Sc., Ph.D.: anatomical and physiological development of apples

PLANT PATHOLOGY

A. F. Posnette, M.A., Sc.D., Ph.D., A.I.C.T.A., *Head of Section*: virus diseases
J. E. Cross, B.Sc., Ph.D., *Deputy Head of Section*: bacterial diseases; bacteriophages

UNITED KINGDOM

Miss M. Bennett, B.Sc.Hort., M.Sc., Dip.Hort.: fruit diseases; plum silver leaf; plantation experiments; pathology records

R. T. Burehill, B.Sc., Ph.D.: air-borne fungal diseases, apple scab, mildew, *gloeosporium*

R. Cropley, N.D.H., Dip.Hort.: top fruit virus diseases

Miss E. D. Jacobs-Larkcom, B.A.: biochemistry of host-pathogen relations

D. S. Kirkham, Ph.D.: apple and pear scab; physiology of parasitism

J. T. Legg, B.Sc.: virus diseases of hops and *Rubus*

M. H. Moore, M.Sc., Ph.D., Dip.Hort.: fungal diseases of fruit plants; fungicides

G. W. F. Sewell, Ph.D.: soil-borne fungal diseases

P. W. Talboys, Ph.D., D.I.C.: Verticillium wilts; physiology of parasitism

J. M. Thresh, B.Sc., A.R.C.S.: virus diseases of *Ribes*

J. F. Wilson, B.Sc.: hop verticillium wilt, field trials

PLANT PHYSIOLOGY

H. W. B. Barlow, B.Sc., *Head of Section*: studies on tree growth and cropping; auxins and inhibitors; shoot morphology

D. J. Avery, Ph.D., A.R.C.S., D.I.C.: CO_2 exchange; net assimilation

F. W. M. Llewellyn, Ph.D., A.R.C.S.: effect of sprays on leaf, growth, and crop

D. H. Maggs, B.Sc.: interaction of tree parts in growth

C. A. Priestley, M.A., Ph.D., D.I.C.: carbohydrate storage and use

PLANT PROTECTIVE CHEMISTRY

A. H. Kirby, M.Sc., Ph.D., F.R.I.C., *Head of Section*: chemical structure in relation to biological activity

L. D. Hunter, B.Sc.: organic synthesis and mode of action, fungicides and bactericides

R. P. Tew, F.R.I.C.: assay of spray deposits and residues, analytical methods

POMOLOGY

W. S. Rogers, M.A., D.Sc., Dip.Hort., A.Inst.P., *Head of Section*: rootstocks; root studies; strawberries; frost control

Miss A. B. Beakbane, Ph.D., N.D.H.: histology; culture of *Rubus*

R. M. Fulford, B.Sc.: analysis of fruiting; biennial bearing

R. J. Garner, M.Sc., N.D.H., Dip.Hort.: propagation; cherry rootstocks

Miss E. M. Glenn, B.Sc.: field records; plum rootstocks; walnuts

G. C. Head, B.Sc.: root studies

Miss E. Keep, B.Sc.Hort.: cytology; plant breeding

R. L. Knight, O.B.E., D.Sc., A.I.C.T.A., Dip.Agr.: plant breeding

Miss I. Modlibowska, Ph.D.: frost studies

Miss B. G. Mosse, Ph.D., Dip.Hort.: mycorrhiza; histology
(seconded to Rothamsted Experimental Station)

A. P. Preston, N.D.H.: apple rootstocks; pruning

SCIENTIFIC LIAISON

H. B. S. Montgomery, B.A., Ph.D., D.I.C., *Head of Section*

J. H. Walker, B.Sc., *Liaison Officer*: fruit in gardens; peach culture

STATISTICS

S. C. Pearce, Ph.D., *Head of Section*: experimental design; plant variation

D. A. Holland, B.Sc.: multivariate analysis; nutritional and growth problems

D. H. Rees, B.Sc.Econ.: multivariate analysis: insect populations

P. Sprent, B.Sc.: growth curves

Glasshouse Crops Research Institute

Worthing Road, Rustington, Littlehampton, Sussex. Tel.: Littlehampton 1414

The work of the Institute covers not only glasshouse crops but also mushrooms, and bulbs, flowers and shrubs grown in the open.

F. W. Toovey, O.B.E., B.Sc., A.R.C.S., A.I.C.T.A., M.I.Biol., *Director*

G. F. Sheard, M.Sc., *Scientific Liaison Officer*

UNITED KINGDOM

CHEMISTRY

- G. W. Winsor, B.Sc., Ph.D., A.R.I.C., D.I.C., *Head of Department*: soils and plant nutrition; tomato fruit quality
P. Adams: analytical control of experiments
J. N. Davies, B.Sc., Ph.D.: organic plant constituents
G. E. Hobson, B.Sc., M.Sc.: plant biochemistry; enzymes in tomato fruit
M. I. E. Long: manurial trials under glass
D. M. Massey, B.Sc., M.I.Biol.: soil salinity
J. H. L. Messing, B.Sc.: manganese toxicity

CROP PROTECTION

- W. H. Read, M.Sc., F.R.I.C., *Head of Department*: chemical control of pests and diseases, particularly glasshouse red spider mite; soil sterilization
Mrs. V. A. Cooke, B.Sc.: bio-assay of, and resistance to, acaricides
J. T. Hughes, B.Sc., A.R.I.C.: pesticide residues; soil sterilants
Miss P. M. Smith, B.Sc.: fungicides
R. J. Smith, B.Sc., Ph.D., A.R.I.C.: organic synthesis; fungicides and soil sterilants

HORTICULTURE

- G. F. Sheard, M.Sc., *Head of Department*
A. C. Bunt, N.D.H.: loamless composts; plant containers; carnation culture
A. J. Cooper, B.Sc., Ph.D.: tomato growth control and ripening disorders
P. B. Flegg, B.Sc., A.R.I.C., M.I.Biol.: mushroom culture
Z. J. Kulwicic: flower keeping quality

PLANT BREEDING

- L. A. Darby, B.Sc., *Head of Department*: tomato, cucumber, lettuce, anemone
J. Pelham, B.A.: tomato disease resistance; mushroom
J. W. M. Smith: tomato rootstocks; lettuce

PLANT PATHOLOGY DIVISION

- L. Broadbent, D.Sc., Ph.D., M.I.Biol., *Head of Division*: epidemiology of virus diseases (tomato, narcissus)

Entomology

- N. W. Hussey, B.Sc., Ph.D., *Head of Department*: glasshouse red spider mite; mushroom Phoridae
Miss B. Gurney: mushroom mites
W. H. Parr, M.I.Biol.: glasshouse red spider mite
I. J. Wyatt, B.Sc., Dip.Agr.Sc., Dip.Trop.Sc.: mushroom pests, particularly Cecidomyiidae

Mycology and Bacteriology

- F. T. Last, B.Sc., Ph.D., D.I.C., A.R.C.S., M.I.Biol., *Head of Department*: soil microbiology in relation to disease problems; mushroom composting
Miss M. H. Ebben, M.A., M.I.Biol.: root diseases and carnation wilts
Miss D. G. Gandy, M.Sc.: mushroom culture and diseases: chrysanthemum petal blight (*Itersonilia perplexans*)

Nematology

- J. J. Hesling, B.Sc., A.R.C.S., *Head of Section*: bulb eelworm (*Ditylenchus dipsaci*); mushroom eelworms

UNITED KINGDOM

Virology

- M. Hollings, B.Sc., M.I.Biol., *Head of Department*: virus purification and serology; viruses of ornamentals
Miss M. Norrish: viruses of ornamentals
Miss O. M. Stone, M.A., Ph.D., M.I.Biol.: viruses of ornamentals; meristem culture

PLANT PHYSIOLOGY

- E. R. Leonard, D.Sc., A.R.C.S., M.I.Biol., M.Inst.R., *Head of Department*: factors controlling development of first truss in tomato
H. R. B. Hack, B.A., M.I.Biol.: soil moisture and aerial environment (tomato)

STATISTICS

- D. Cooke, M.A., Dip.Stat., *Head of Section*: design and analysis of experiments; mathematical models for horticultural science
J. H. Gisborne, A.I.C.T.A.: design and analysis of experiments

The Grassland Research Institute

Hurley, Maidenhead, Berkshire. Tel: Hurley 363

- William Davies, D.Sc. (Wales), Hon.D.Sc. (N.Z.), M.I.Biol., *Director*
T. E. Williams, B.Sc., *Deputy Director*

ANIMAL AGRONOMY

- F. E. Alder, D.F.C., B.Sc., M.A., *Head of Department*
D. E. Eyles, M.Sc.: sheep
J. C. Tayler, M.A., Dip.Agr.: beef cattle—carcass quality

BIOCHEMISTRY AND ANIMAL NUTRITION

- W. F. Raymond, M.A., F.R.I.C., *Head of Department*
E. C. Jones, B.Sc., F.R.I.C.(E): analytical chemistry
L. J. Lambourne, M.Sc.: nutrition
R. A. Terry, A.R.I.C.: biochemistry
D. J. Thomson, B.Sc., Dip.Agr.: sheep nutrition
J. M. A. Tilley, B.Sc., D.Phil.: biochemistry

BIOMETRICS

- C. D. Kemp, B.Sc., Dip.Stat., *Head of Department*
Miss S. M. Green, M.A., Dip.Stat.

EXTRA MURAL

- H. K. Baker, B.S., Ph.D., Dip.Agr., *Head of Department*
D. T. Chambers, M.Sc.: calf studies
R. A. Redford, *Assistant to Director*

GRASS/ANIMAL ECOLOGY

- C. R. W. Spedding, M.Sc., Ph.D., M.I.Biol., *Head of Department*
J. Hodgson, B.Sc.: grass intake of calves and lambs
D. D. Kydd, M.A.: ecology of the grassland sward

HERBAGE AGRONOMY

- J. O. Green, M.Sc., *Head of Department*
R. C. Anslow, B.Sc., M.Sc., M.I.Biol.: defoliation and regrowth
D. W. Cowling, B.Sc.: nitrogen balance
L. Jones, B.Sc.: herbicides and pasture renovation

UNITED KINGDOM

LEY AGRONOMY

- T. E. Williams, B.Sc., *Head of Department*
C. R. Clement, B.Sc., Ph.D.: soil fertility
A. J. Heard, B.Sc., M.Sc.: crop agronomy
W. Stiles, M.Sc.: irrigation

MICROBIOLOGY

- William Davies, D.Sc. (Wales), Illon.D.Sc. (N.Z.), M.I.Biol., *Head of Department*
Miss E. Grossbard, B.Sc., Ph.D., D.I.C., M.I.Biol.: soil microbiology

PLANT PHYSIOLOGY

- O. R. Jcwhiss, B.Sc., Ph.D., A.R.C.S., D.I.C., M.I.Biol., *Head of Department*:
growth physiology
D. A. Lambert, B.Sc.: physiology of seed yield
G. J. A. Rylc, B.Sc., Ph.D.: developmental physiology
R. D. Williams, B.Sc., Ph.D., M.I.Biol.: nutrition, assimilation and metabolism

Houghton Poultry Research Station

Houghton, Huntingdon. Tel.: St. Ives 3168

- R. F. Gordon, D.Sc., M.R.C.V.S., *Director*: bacterial diseases in poultry
P. M. Biggs, Ph.D., M.R.C.V.S.: the avian leucosis complex and fowl paralysis
L. G. Chubb, M.Sc., Ph.D., A.R.I.C.: nutritional biochemistry of poultry in
relation to disease
Miss Doreen M. Cooper, B.Sc.Agr.: poultry husbandry
J. S. Garside, Ph.D., M.R.C.V.S., D.V.S.M. (Vict.): virus diseases; respiratory
infections of the fowl and the avian leucosis complex
W. M. Goodchild, M.Sc., M.R.C.V.S.: clinical research and routine diagnosis
E. G. Harry, M.Sc., B.Pharm., Ph.C.: bacteriology; aerial disinfection and
hatchery hygiene
C. Horton-Smith, O.B.E., Ph.D., D.I.C.: protozoa and other parasitic diseases
in poultry
L. N. Payne, B.V.Sc., Ph.D., M.R.C.V.S.: the avian leucosis complex and fowl
paralysis
C. C. Wannop, M.R.C.V.S.: clinical research and routine diagnosis

John Innes Institute

Bayfordbury, Hertford, Herts. Tel.: Hertford 3191/2
K. S. Dodds, D.Sc., Ph.D., *Director*

APPLIED GENETICS

- J. R. S. Fincham, B.A., Ph.D., *Head of Department*
J. R. O. Dawson, Ph.D.: tobacco mosaic in tomatoes
P. Matthews, B.Sc.: cherry breeding
H. Williams, B.Sc.: strawberry breeding
A. G. Brown: apple and pear breeding

CELL BIOLOGY

- H. Harris, B.A., M.B., B.S., D.Phil., *Head of Department*: nuclear RNA
M. E. Bramwell, Ph.D.: intracellular nucleotides
J. C. W. Crawley, B.Sc.: electron microscopy
L. F. La Cour, M.B.E.: nucleic acids on chromosomes
J. McLeish, Ph.D.: isolated nuclei
W. T. Riley, B.A.: sequence analysis of DNA
A. Rodgers, Ph.D.: physical methods; ribosomes
T. Spencer, D.Phil.: protein synthesis in enucleate cells

UNITED KINGDOM

R. G. Stickland, Ph.D.: regenerating liver
N. Sunderland, Ph.D.: culture of plant cells
J. W. Watts, D.Phil.: cytoplasmic RNA
D. H. Williamson, Ph.D.: synchronized cell cultures

GENETICS

J. R. S. Fincham, Ph.D., *Head of Department*: genetics and enzymology of *Neurospora*
A. Coddington, Ph.D.: protein structure
P. R. Day, Ph.D.: genetics of *Coprinus*
R. Holliday, Ph.D.: mutation and crossing-over in *Ustilago*

PHYSIOLOGY & PLANT CULTURE

W. J. C. Lawrence, O.B.E., V.M.H., *Head of Department*: physiology of growth in tomato
G. G. Hussey, Ph.D.: physiology of growth in tomato
A. Calvert: physiology of growth in tomato

POTATO GENETICS

N. W. Simmonds, M.A., *Head of Department*: genetics
J. B. Harborne, Ph.D.: biochemistry
R. K. McKee, Ph.D.: pathology
G. E. Marks, B.Sc.: cytology
G. J. Paxman, Ph.D.: genetics

Agricultural and Horticultural Research Station, Long Ashton (Bristol University)

Bristol. Tel.: Long Ashton 2181
Professor H. G. H. Kearns, O.B.E., B.Sc., Ph.D., Dip.Agr., *Director*
R. W. Marsh, M.A., *Assistant Director*
J. T. Martin, D.Sc., Ph.D., F.R.I.C., *Assistant Director*

CHEMISTRY: ANALYTICAL & GENERAL

J. T. Martin, D.Sc., Ph.D., F.R.I.C., *Head of Section*
E. J. Skerrett, Ph.D., A.R.I.C.: analytical methods
E. Somers, M.Sc., Ph.D.: mechanism of fungicidal action

CHEMISTRY: ORGANIC

D. Woodcock, D.Sc., Ph.D., F.R.I.C., *Head of Section*: fungal metabolism
Mrs. M. Clarke, B.Sc., A.R.I.C.: fungicidal activity and chemical constitution

CHEMISTRY: PHYSICAL

W. D. E. Thomas, B.Sc., Ph.D., F.R.I.C., *Head of Section*
C. P. Lloyd-Jones, B.Sc., A.R.I.C.: radioactive tracers

CHEMICAL MICROBIOLOGY

D. J. D. Nicholas, D.Sc., Ph.D., A.K.C., F.R.I.C., *Head of Section*: nitrogen metabolism of micro-organisms
J. A. Anderson, B.Sc., Ph.D.: nitrifying organisms

CIDER & FRUIT JUICES

A. Pollard, M.Sc., Ph.D., *Head of Section*
F. W. Beech, B.Sc., Ph.D., A.R.I.C.: microbiology of cider yeasts
L. F. Burroughs, B.Sc., Ph.D., A.R.I.C.: chemistry of fermentation

UNITED KINGDOM

J. G. Carr, B.Sc., Ph.D.: microbiology of cider bacteria

Miss M. E. Kieser, B.Sc., A.R.I.C.: chemistry of fruit juices

C. F. Timberlake, M.Sc., Ph.D., A.R.I.C.: metallic complexes in fruit products

G. C. Whiting, B.Sc., Ph.D.: biochemistry of fermentation

DOMESTIC FOOD PRESERVATION

Miss M. Leach, N.D.P.: *Head of Section*

ENTOMOLOGY

Professor H. G. H. Kearns, O.B.E., B.Sc., Ph.D., Dip.Agr., *Head of Section*

H. R. Mapother, B.A., B.Sc., A.R.I.C.: spray materials for tropical crops

N. G. Morgan, B.Sc., Ph.D.: techniques of spray application

B. D. Smith, B.Sc., Ph.D., D.I.C.: insect pests of black currants

A. Stringer, B.Sc., A.R.C.S.: insect ecology

NUTRITION OF FRUIT PLANTS

C. Bould, M.Sc., Ph.D., *Head of Section*: foliar diagnosis

D. G. Hill-Cottingham, M.Sc., Ph.D., A.R.I.C.: nitrogen metabolism

R. A. Webb, B.A., D.Phil.: trace-elements in fruit crops

PLANT BIOCHEMISTRY

H. E. Davenport, B.Sc., Ph.D., *Head of Section*

PLANT CONSTITUENTS

A. H. Williams, B.Sc., M.A., *Head of Section*: phenolics in fruit trees

PLANT PATHOLOGY

R. W. Marsh, M.A., *Head of Section*

R. J. W. Byrde, B.Sc.Hort., Ph.D.: bio-assay of fungicides

A. T. K. Corke, B.Sc., Ph.D.: perennation of fruit-disease fungi

PLANT PHYSIOLOGY

E. J. Hewitt, B.Sc., Ph.D., A.K.C., *Head of Section*: mineral nutrition and metabolism of higher plants

A. J. Abbott, M.Sc., Dip.Hort.: nutrition of excised tissues

POMOLOGY & PLANT BREEDING

L. C. Luckwill, B.Sc., Ph.D., *Head of Section*: growth substances and fruit tree viruses

D. L. Abbott, B.Sc.: physiology of fruit plants

E. W. Hobbs, M.B.E., B.Sc., N.D.H.: plantations management

Miss B. A. Rake, B.Sc., N.D.H.: gooseberry culture

R. R. Williams, B.Sc., Dip.Hort.Sc.: cider-fruit growing; pollination studies

D. Wilson, B.Sc., Ph.D.: breeding of currants and strawberries

SCIENTIFIC LIAISON

M. Greenwood, O.B.E., M.Sc., *Head of Section*

STATISTICS

G. M. Clarke, M.A., Dip.Stat., *Head of Section*

WILLOWS

K. G. Stott, B.Sc., *Head of Section*

UNITED KINGDOM

National Institute of Agricultural Engineering

(*The British Society for
Research in Agricultural Engineering*)

Wrest Park, Silsoe, Beds. Tel.: Silsoe 421. 'Grams: Ninagen, Silsoe
W. H. Cashmore, C.B.E., B.A., N.D.A., C.I.Mech.E., M.I.Agr.E., *Director*

CEREALS AND SEEDS UNIT

J. Woodforde, M.I.E.E., A.M.I.Mech.E., *Head of Unit*
M. G. R. Warner, M.A., A.M.I.E.E.: drying of grain and seeds

ENGINEERING DIVISION

H. J. Hamblin, O.B.E., B.A., M.I.Agr.E., *Head of Division*

Drier Performance Department

P. H. Bailey, B.Sc.Eng., A.K.C., *Head of Department*: drying; wheel performance; hop cultivation

Equipment Construction Department

H. J. Hamblin, O.B.E., B.A., M.I.Agr.E., *Head of Department*
G. R. Chalmers, M.I.Agr.E.: experimental machinery development
D. E. Filby, B.A.: measuring and recording equipment development

Instrumentation Department

S. W. R. Cox, B.Sc., A.Inst.P., *Head of Department*
J. Matthews, B.Sc.: application of the electrical properties of grain
R. B. Sharp: fluorescent tracers

Tractor Performance Department

T. C. D. Manby, M.Sc.Eng., M.I.Agr.E., *Head of Department*
H. J. Nation, B.Sc.Eng., A.M.I.Mech.E.: tractor and power component performance

Transmissions Department

D. F. Howson, B.Sc., A.M.I.Mech.E., *Head of Department*
A. G. M. Bean, M.A., A.M.I.Mech.E.: testing of hydraulic units

ENVIRONMENTAL CONTROL DIVISION

L. G. Morris, B.Sc.Eng., A.I.H.V.E., *Head of Division*
G. E. Bowman, B.Sc.: measurements, including heat consumption, light, radiation and temperatures
J. B. Byass, M.A.: application of pesticides to trees
R. J. Courshee, B.Sc.: application of fertilizers, pesticides and seeds
D. A. Wells: irrigation of glasshouse crops

Glasshouse Department

K. W. Winspear, *Head of Department*: control of air temperature and humidity by heating and automatic ventilation

Growth Chamber Department

G. A. Carpenter, B.Sc., A.M.I.Chem.E., *Head of Department*

Plant Physiology Department

J. V. Lake, B.Sc., Ph.D., M.Biol., *Head of Department*: water loss and CO₂ relationship of plants under glass; influence of temperature on growth and development of tomato plants
R. I. Edwards: light transmission of glasshouses

HORTICULTURAL RESEARCH UNIT

F. H. Vanstone, B.Sc., Ph.D., A.Inst.P., *Head of Unit*

UNITED KINGDOM

INFORMATION DIVISION

J. K. W. Slater, M.A., M.Sc.Agr.Eng., A.M.I.Agr.E., *Head of Division*

MECHANIZATION DIVISION

D. I. McLaren, B.Sc.Agr., N.D.A., M.I.Agr.E., *Head of Division*

Cultivations Department

J. C. Hawkins, B.Sc.Agr., N.D.A., M.I.Agr.E., *Head of Department*

W. Boa, B.Sc.Agr., N.D.A., A.M.I.Agr.E.: drainage, root harvesting

G. L. Maughan, N.D.A., A.M.I.Agr.E.: sugar-beet mechanization

J. S. Wolfe, B.A., B.Sc.: tillage

Harvesting and Handling Department

E. S. Mitchell, B.Sc.Agr., M.I.Agr.E., *Head of Department*

R. E. Arnold, M.A.: threshing, combine-harvesting

E. S. Devine, M.A., B.Agr.Hort., A.M.Inst.W.S.: fruit and vegetable handling, packaging; work study

H. C. Green, M.A., Dip.Agr.Sc.: damage to agricultural and horticultural crops

J. B. Holt, B.Sc., M.Sc.Agr.Eng.: mechanical handling

M. E. Nellist, M.Sc.Agr.Eng., B.Sc.Agr.: harvesting herbage seeds

G. Shepperson, B.Sc., Dip.Agr., A.M.I.Agr.E.: drying and storage of hay and grain

Implement Testing Department

P. Hebblethwaite, M.S. (Mich.), B.Sc.Agr., N.D.A., A.M.I.Agr.E., *Head of Department*

D. E. Patterson, M.Sc.Agr.Eng., B.Sc.Agr.: machinery testing techniques

Metals and Materials Section

R. D. Richardson, B.Sc.Eng., A.M.I.Mech.E., *Head of Section*

NATIONAL INSTITUTE OF AGRICULTURAL ENGINEERING, SCOTTISH STATION, see page 91

A.R.C. FARM BUILDINGS UNIT, see page 17

National Institute for Research in Dairying

(University of Reading)

Shinfield, Reading, Berks. Tel.: Reading 83103

Prof. R. G. Baskett, O.B.E., M.Sc., F.R.I.C., *Director*

BACTERIOLOGY

W. A. Cuthbert, M.Sc., *Head of Department*: microbiology of milk and milk products

Miss C. M. Cousins, B.Sc., Ph.D.: disinfection of dairy plant and equipment

J. G. Franklin, B.Sc., Ph.D.: microflora of cheese, including lactobacilli

R. Fuller, M.Sc.: intestinal flora of the pig

Miss E. I. Garvie, B.Sc., Ph.D., N.D.D.: National Collection of Dairy Organisms

D. J. Jayne-Williams, M.Sc., Ph.D.: heat-resistant micro-organisms

M. Lev, B.Sc., Ph.D.: gut flora of the chick

F. K. Neave, B.S.A.: bovine mastitis

J. D. Oram, B.Sc.: nutrition of the lactic acid bacteria

B. Reiter, Ing.Agr.: starter streptococci; bacteriophage; techniques for cheese-making

Miss M. E. Sharpe, B.Sc., Ph.D.: serological classification of streptococci and lactobacilli

C. M. Thorley, B.Sc., Ph.D.: microbiology of the bovine rumen

UNITED KINGDOM

CHEMICAL MICROBIOLOGY

- N. J. Berridge, Ph.D., D.Sc., *Head of Department*: rennin; the clotting of milk
G. C. Cheeseman, B.Sc., Dip.Bact., Ph.D.: application of paper chromatography
to microbiology
L. A. Mabbot, B.Sc., Ph.D.: microbiology of cheese

CHEMISTRY

- S. J. Rowland, B.Sc., Ph.D., F.R.I.C., *Head of Department*: chemistry of milk
composition and of the nutrition of the dairy cow
R. Aschaffenburg, Ph.D.: milk proteins and enzymes; control of pasteurization
R. L. J. Lyster, M.A., Ph.D.: milk proteins and enzymes
J. A. F. Rook, B.Sc., Ph.D., F.R.I.C.: milk composition and its controlling
factors; ruminant nutrition
R. H. Smith, B.Sc., Ph.D.: mineral metabolism in dairy cattle
J. E. Storry, B.Sc., Ph.D.: ruminant metabolism

DAIRY HUSBANDRY

- A. S. Foot, M.Sc., *Head of Department*: environment in relation to milk yield
and milk quality
R. Braude, Ph.D., D.Sc., Dip.Agr., Dip.Anim.Hush.: pig nutrition and manage-
ment
A. G. Chamberlain, B.Sc., Ph.D.: pig nutrition
P. A. Clough, B.Sc.: machine milking technique; cowshed management
F. H. Dodd, B.Sc., Ph.D.: machine milking technique; cowshed management;
monozygous twin collection
R. G. Kingwill, B.Sc., M.S.: management and bovine mastitis
C. Line, B.Sc.: grassland evaluation
K. G. Mitchell, B.Sc., Ph.D., N.D.A.: pig nutrition
J. C. Murdoch, B.Sc., Ph.D.: crop conservation

ENGINEERING

- H. S. Hall, B.Sc., *Head of Department*: dairy machinery and equipment
R. T. Budd, B.Sc.: design of specialized equipment
H. Burton, B.Eng., M.Sc., A.M.I.E.E.: heat treatment of milk
J. B. Hoyle, M.A., A.M.I.E.E., A.M.I.Mech.E.: testing of dairy equipment
S. F. Suffolk, B.Sc.: design of specialized equipment
C. C. Thiel, B.Sc., Ph.D.: hygiene of milking equipment

FEEDING AND METABOLISM

- C. C. Balch, B.Sc., Ph.D., *Head of Department*: ruminant nutrition
W. H. Broster, B.Sc., Ph.D.: nutrition of dairy stock
R. C. Campling, M.Sc.: ruminant nutrition
J. H. B. Roy, M.A., Dip.Agr., Ph.D.: calf nutrition

NUTRITION

- S. K. Kon, D.Sc., Ph.D., F.R.I.C., *Head of Department*: nutrition
Miss M. E. Coates, F.P.S., Ph.D.: biological assays of vitamins; antibiotics;
germ-free research
Miss B. Doran, B.Sc., M.S.: metabolism of vitamin B₁₂
J. E. Ford, B.Sc., Ph.D.: microbiological methods for assessments of "protein
quality"
Miss M. E. Gregory, M.Sc.Tech., Ph.D., A.R.I.C.: microbiological assays of
B vitamins
G. F. Harrison, M.P.S.: biological assays of vitamins; antibiotics; germ-free
research
Miss K. M. Henry, Ph.D., D.Sc., A.R.C.Sc.I., F.R.I.C.: mineral and protein
metabolism; biological assay of vitamins

UNITED KINGDOM

- J. H. Moore, M.Sc., Ph.D., F.R.I.C.: nutritive value of milk fat
J. W. G. Porter, M.A., Ph.D.: chemistry and metabolism of vitamins; development of digestive enzymes and utilization of nutrients in young animals
S. Y. Thompson, Ph.D., D.Sc.: vitamin A and carotenoid metabolism
Miss J. Toothill, B.Sc., Ph.D., A.R.I.C.: mineral and protein metabolism; biological assay of vitamins
D. L. Williams, B.A.: gas chromatography

PHYSICS

- G. W. Scott Blair, M.A., Ph.D., D.Sc., F.R.I.C., F.Inst.P., *Head of Department*: properties of milk curds; nature of casein-rennin reaction
F. A. Glover, B.Sc., A.Inst.P.: properties of mucin and bovine semen
J. D. S. Goulden, B.Sc., Ph.D.: spectroscopic investigations
L. W. Phipps, B.Sc., A.R.C.S., A.Inst.P.: thermal properties of milk and milk products; studies of homogenization
J. H. Prentiss, B.Sc., A.Inst.P.: physical (especially electrical) properties of milk products
H. W. Thomas, B.Sc., Ph.D., A.Inst.P.: physical aspects of flow and coagulation of blood

PHYSIOLOGY

- S. J. Folley, Ph.D., D.Sc., F.R.S., *Head of Department*: physiology of the mammary gland and reproduction
P. Andrews, B.Sc., Ph.D.: biochemistry of protein synthesis
K. J. Betteridge, M.V.Sc., M.R.C.V.S.: reproductive physiology of the pig
A. T. Cowie, Ph.D., D.Sc., M.R.C.V.S.: endocrinology of lactation and reproduction
R. A. Gibbons, B.Sc., Ph.D.: biochemistry of cervical mucus
H. Gutfreund, Ph.D.: protein synthesis and mechanisms of enzyme action
E. A. Jones, B.Sc., Ph.D.: biochemistry of mitochondria
G. S. Pope, B.Sc., D.Phil., A.R.I.C.: oestrogens in the blood of cattle
G. P. Roberts, B.Sc., Ph.D.: biochemistry of cervical mucus
Mrs. D. Tampion, M.A., Ph.D.: effects of mucus on sperm physiology
J. S. Tindal, B.Sc., Ph.D.: neuroendocrine control of the mammary gland

RADIOBIOCHEMISTRY

- R. F. Glascock, Ph.D., D.Sc., *Head of Department*: metabolism of oestrogens
C. Bishop, B.Sc.: metabolism of oestrogens
G. D. Braithwaite, B.Sc., Ph.D.: effect of oestrogens on intermediary metabolism of ruminant tissues
R. C. Noble, B.Sc.: absorption, transport and metabolism of fats in ruminants
R. W. Smith, B.Sc.: comparative biochemistry of mammary tissue and metabolism of oestrogens
J. D. Townsley, B.Sc., Ph.D.: effect of oestrogens on intermediary metabolism of ruminant tissues
V. A. Welch, B.Sc., Ph.D.: absorption, transport and metabolism of fat in ruminants

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- Miss Z. D. Hosking, B.A.: statistical design and analysis of experiments

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F. Haworth, B.Sc., Ph.D., Dip.Agr.Sc., A.R.I.C., *Head of Section*: nutrition of vegetable crops
D. J. Greenwood, B.Sc., Ph.D.: soil aeration

ENTOMOLOGY

D. W. Wright, M.A., *Head of Section*: chemical control of cabbage root fly and carrot fly
T. H. Coaker, B.Sc.: biology and natural control of cabbage root fly, insect predation
J. A. Dunn, M.Sc., Ph.D.: biology and control of lettuce root aphid and carrott-willow aphid. (Seconded to West African Cocoa Research Institute, Ghana, 1961-64).
G. A. Wheatley, B.Sc.: behaviour of insecticides in soils

IRRIGATION

E. J. Winter, M.C., M.Sc., *Head of Section*: crop water use, water conservation
D. H. Drew, B.Sc.: form and function of root systems
P. J. M. Sale, B.Sc., Ph.D.: additives to irrigation water, irrigation and soil structure
P. J. Salter, B.Sc., Ph.D.: availability of soil moisture, moisture release characteristics

PATHOLOGY

W. G. Keyworth, B.Sc., Ph.D., A.R.C.S., D.I.C., *Head of Section*: wilt diseases of beans, peas, tomatoes; silvering disease of red beet
A. G. Channon, B.Sc., Ph.D.: downy mildews, clubroot of crucifers, parsnip canker
R. B. Maude, B.A., M.Sc.: seed-borne fungi
J. A. Tomlinson, B.Sc., Ph.D.: virus diseases

PHYSIOLOGY

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Grange-over-Sands, Lancs. Tel.: Grange-over-Sands 2264/5

and Moor House Field Station

Garrigill, Alston, Cumberland. Tel.: Kirkby Thore 394

- J. B. Cragg, M.Sc., *Director*: inter-relations between moorland soil fauna and microflora

CONSERVATION

- Miss H. M. T. Frankland, B.Sc., Ph.D., *Regional Officer*
I. Prestt, B.Sc., *Regional Officer*: vertebrate ecology (reptiles and birds)

MICROFLORA

- T. F. Hering, M.A., Ph.D.: micro fungi of woodlands

MOORLANDS

- D. T. Crisp, B.Sc., Ph.D.: productivity of upland streams
A. J. P. Gore, B.Sc.: ecology of peat

PLANT SOIL

- A. H. F. Brown, B.Sc.: nutrient cycles in oak woodlands
A. Carlisle, B.Sc., Ph.D.: nutrient cycles in oak woodlands; autecology and taxonomy of *Quercus* sp.

UNITED KINGDOM

WOODLAND FAUNA

- K. L. Bocock, B.Sc.: litter and soil fauna; nutrition of litter feeders
O. W. Heal, B.Sc., Ph.D.: litter and soil protozoa
J. E. Satchell, B.Sc., Ph.D.: litter and soil fauna; population studies

Furzebrook Research Station

- Wareham, Dorset. Tel.: Corfe Castle 381/2
M. V. Brian, M.A., *Officer-in-Charge*: ecology of social insects

COASTAL BOTANY

- D. S. Ranwell, B.Sc., Ph.D.: estuarine ecology

CONSERVATION

- J. H. Hemsley, B.Sc., *Regional Officer*: taxonomic botany
Miss J. M. Laptain, B.Sc., *Regional Officer*: plant ecology

COASTAL PHYSIOGRAPHY

- A. P. Carr, B.Sc.: coastal chronology and sand movement
D. G. Hewett, B.Sc.: dune and shingle ecology
C. Kidson, B.A., Ph.D.: physiography of dunes and spits

HEATH ECOLGY

- S. B. Chapman, B.Sc., Ph.D.: heather burning and nutrient cycles
P. Merrett, B.Sc., Ph.D.: ecology of spiders

Monks' Wood Experimental Station

- Abbots Ripton, Huntingdon. Tel.: Abbots Ripton 308
K. Mellanby, C.B.E., B.A., Sc.D., Ph.D., *Director*: ecology; entomology

CONSERVATION RESEARCH

- E. A. G. Duffey, B.Sc., Ph.D.: arachnology; ornithology
M. G. Morris, B.Sc.: entomology

TOXIC CHEMICALS & WILDLIFE SECTION

- B. N. K. Davis, B.Sc., Ph.D.: soil zoology
N. W. Moore, B.A., Ph.D.: entomology; ornithology
C. H. Walker, B.Sc., M.Sc.: agricultural chemistry
J. M. Way, B.Sc., M.Sc.: agricultural botany

WOODLANDS

- J. D. Ovington, B.Sc., Ph.D.: quantitative ecosystem ecology of woodlands
M. T. Tanton, B.Sc., Ph.D.: small mammal populations

Speyside Research Station

- Achantoul, Aviemore, Inverness-shire. Tel.: Avicmore 297
F. H. W. Green, V.R.D., M.Sc., *Officer-in-Charge*: climatology

DEER RESEARCH

- V. P. W. Lowe, B.A.: red deer conservation research
B. Mitchell, B.Sc., Ph.D.: red deer conservation research

LAND USE/VEGETATION

- D. N. McVean, B.Sc., Ph.D.: ecology of forest and mountain vegetation;
macrolichens

UNITED KINGDOM

East Anglian Regional Office

Government Offices, Bishopgate, Norwich, Norfolk NOR 22P.
Tel.: Norwich 20558

B. Forman, B.Sc., Ph.D., *Regional Officer*: zoology
M. George, B.Sc., Ph.D.: entomology

Midland Regional Office

Attingham Park, Shrewsbury, Shropshire. Tel.: Upton Magna 284
T. Pritchard, B.Sc., Ph.D., *Regional Officer*: plant ecology and genetics

South Wales Regional Office

Dept. of Zoology, University College of Swansea, Singleton Park, Swansea.
Tel.: Swansea 25678

P. Walters Davies, B.Sc., *Regional Officer*: ornithology

Unit of Grouse & Moorland Ecology

Natural History Dept., Marischal College, Aberdeen. Tel.: Aberdeen 24367

D. Jenkins, M.R.C.V.S., M.A., D.Phil.: animal ecology
G. R. Miller, B.Sc.: plant ecology
A. Watson, B.Sc., Ph.D.: animal ecology

Norfolk Agricultural Station

Sprawston, Norwich, Norfolk, NOR 810. Tel.: Norwich 47331/2

A. C. Owers, M.A., Dip.Agr. (Cantab.), *Director*
J. H. Baldwin, B.Sc., Dip.Agr.: crop husbandry
G. W. Cussans, B.Sc.: chemical weed control
B. M. Scott, M.A., Dip.Agr. (Cantab.): livestock husbandry

Seale-Hayne Agricultural College

Newton Abbot, Devon. Tel.: Newton Abbot 2323

Animal and crop husbandry; farm management
H. Ian Moore, M.Sc., Ph.D. (Leeds), N.D.A., Dip.Agr. (Cantab.), *Principal*
H. T. Williams, B.A.Econ. (Wales), *Deputy Principal and Head of Farm Management Department*

SCOTLAND

DEPARTMENT OF AGRICULTURE AND FISHERIES FOR SCOTLAND

Agricultural Advisory Service—see Agricultural Colleges

Agricultural Economics

St. Andrew's House, Edinburgh. Tel.: Edinburgh Waverley 8404
O. J. Beilby, B.A., B.Litt., M.A., *Advisory Officer in Agricultural Economics*
Headquarters: Broomhouse Drive, Saughton, Edinburgh, 11.
Tel.: Edinburgh Craiglockhart 4040
G. F. Hendry, M.A., *Principal Agricultural Economist*
P. M. Scola, B.Sc.Econ., M.Sc.Econ., *Principal Agricultural Economist*

UNITED KINGDOM

Infestation Control

RODENTS

Headquarters: East Craigs, Corstorphine, Edinburgh, 12.
Tel.: Edinburgh Corstorphine 3361
Miss C. M. Boyle, B.Sc.

INSECTS

Headquarters: 71 Renfield Street, Glasgow, C.2
Tel.: Glasgow Douglas 9161
A. W. Mayhew, M.Sc., B.Sc.

Scientific Services

East Craigs, Corstorphine, Edinburgh, 12
Tel.: Edinburgh Corstorphine 3361
C. E. Foister, F.R.S.E., B.A.Hons., Ph.D., *Director*
D. W. Williams, M.Sc., B.Sc., Ph.D., *Deputy Director*

AGRICULTURAL ZOOLOGY AND CHEMISTRY

N. C. Morgan, B.Sc.

MYCOLOGY

Miss M. J. M. Noble, F.R.S.E., B.Sc., Ph.D.

PLANT PATHOLOGY

J. M. Todd, B.Sc., A.I.C.T.A.

POTATO

J. L. Hardie, B.Sc.Agr., Ph.D.

SEED TESTING, CEREAL AND GRASS AGRONOMY

J. R. Thomson, B.Sc., B.Sc.Agr.

UNIVERSITIES

UNIVERSITY OF ABERDEEN

Aberdeen, Scotland. Tel.: 24367

Department of Agriculture

Marischal College, Aberdeen. Tel.: 24367
J. R. Raeburn, Ph.D., F.R.S.E., *Professor and Head of Department*: agricultural economics, input-output relations
R. Blair, Ph.D.: lean meat development in pigs, histology
D. G. Dempster, B.Sc., B.Sc.Agr.: grassland management
P. J. Faulks, M.A.: plant genetics, biometry
A. H. H. Fraser, M.D., D.Sc.: beef cattle and sheep husbandry
A. M. Paton, Ph.D.: microbiology
H. A. Robertson, Ph.D., F.R.I.C.: endocrinology
J. R. T. Short, D.Phil., D.Sc.: entomology
J. H. Smith, M.Sc.: agricultural economics

Department of Forestry

Old Aberdeen, Aberdeen. Tel.: 45251

H. M. Steven, C.B.E., M.A., Ph.D., F.R.S.E., *Professor and Head of Department*: silvicultural and ecological studies of native woodland communities
M. Crooke, B.Sc., Ph.D.: forest entomology

UNITED KINGDOM

- P. W. Davis, M.C., B.A.: costs in private forestry in Scotland
A. J. Low, B.Sc., M.Sc.: reaction wood in conifers
W. M. McNeill, M.B.E., T.D., M.A., M.S.: natural regeneration of tree species
J. S. Murray, B.Sc.: forest pathology
D. A. Rook, B.Sc., M.S.: photosynthesis in forest trees

Department of Soil Science

Old Aberdeen, Aberdeen. Tel.: 45251

- J. Tinsley, B.Sc., Ph.D., F.R.I.C., *Reader and Head of Department*: soil chemistry—plant nutrition
J. R. H. Coutts, M.Sc., D.Sc., F.Inst.P.: soil physics—micrometeorology
E. A. Fitzpatrick, Ph.D.: pedology—frost phenomena
J. W. Parsons, B.Sc., Ph.D.: soil chemistry—organic matter

A.R.C. Unit of Statistics, *see* page 18

UNIVERSITY OF EDINBURGH

Agriculture

See Edinburgh School of Agriculture, page 79

Institute of Animal Genetics

West Mains Road, Edinburgh, 9. Tel.: Newington 1081

- Prof. C. H. Waddington, C.B.E., Sc.D., D.Sc., F.R.S., *Head of Department and Laboratory*: physiological genetics
Miss C. Auerbach, Ph.D., D.Sc., F.R.S.: mutation
G. H. Beale, M.B.E., B.Sc., Ph.D., F.R.S.: genetics of microorganisms
J. O. Bishop, B.Sc., Ph.D.: biochemical genetics
G. A. Clayton, B.Sc., Ph.D.: livestock breeding
Mrs. R. M. Clayton, M.A.: immunogenetics
H. Kacser, M.Sc., Ph.D.: genetics of microorganisms
G. G. Selman, B.Sc., Ph.D.: biophysics
Mrs. H. Shizynska, Ph.D.: cytology
B. Woolf, M.A., Ph.D., F.R.S.E.: statistics

A.R.C. Unit of Animal Genetics, *see* page 16

Botany

Royal Botanic Garden, Edinburgh, 3. Tel.: Granton 5531

- R. Brown, D.Sc., F.R.S., *Professor*: cell division and cell growth
A. Nelson, D.Sc., *Reader*: seed germination
J. E. Amoore, D.Phil.: physiology of cell division
W. Blyth, Ph.D.: experimental mycosis
A. J. Brook, Ph.D.: algal ecology
A. P. Brown, Ph.D.: cell cohesion
J. E. Dale, Ph.D.: growth of intact plants
P. H. Davies, Ph.D.: flora of Turkey
R. O. D. Dixon, Ph.D.: enzymes in cell walls
J. Dodds, Ph.D.: salt marsh ecology
A. J. Dyce, Ph.D.: cytology of cultured cells
J. K. Heyes, Ph.D.: biochemistry of nucleic acids
U. E. Loening, D.Phil.: physiology of cell division
R. F. Lyndon, Ph.D.: metabolism of nuclei
J. Tulett, B.Sc.: electron microscopy of plant cells
M. M. Yeoman, Ph.D.: physiology of callus cultures

UNITED KINGDOM

Forestry

George Square, Edinburgh, 8. Tel.: Newington 1011

- C. J. Taylor, M.B.E., E.D., B.Sc., Ph.D., *Acting Head of Department*: problems in the management and treatment of irregular forests
J. M. Caborn, B.Sc., Ph.D.: investigation on shelter effect
J. E. Cousens, B.A., M.A.: oak population studies
W. A. Fairbairn, E.D., D.Sc., F.R.S.E.: light measurements within the forest environment
D. R. Gifford, B.Sc.: soil microbiological studies
D. C. Malcolm, B.Sc.: site studies in Scottish oak woodlands
W. E. S. Mutch, B.Sc., Ph.D.: economics of small woodlands

Veterinary Medicine and Surgery

See Royal (Dick) School of Veterinary Studies, p. 81

Zoology

West Mains Road, Edinburgh 9. Tel.: Newington 1081

- M. M. Swann, M.A., Ph.D., F.R.S., F.R.S.E., *Professor of Natural History*: effect of mutagens during the cell cycle; chemistry of cell division; fertilization
D. E. Bradley: electron microscopy of bacteriophage
G. F. Friend, M.A., B.Sc., F.R.S.E.: subspeciation in British charrs and their parasites
L. J. Hale, B.Sc., Ph.D.: cell activities in morphogenesis—growth and regeneration of marine hydroids; marine aquaria
R. A. Kille, B.Sc., Ph.D.: fertilization
A. W. G. Manning, B.Sc., D.Phil.: genetics of behaviour in *Drosophila*
P. D. Mitchell, M.A., Ph.D.: transport processes in relation to metabolism, growth and differentiation
J. M. Mitchison, M.A., Ph.D.: cell growth during the cell cycle; synchronous cultures; autoradiographs
P. H. Tuft, M.A., Ph.D.: the role of water in growth and morphogenesis; action of morphogenetic inhibitors
P. M. B. Walker, B.A., Ph.D.: ultraviolet microspectrophotometry; nuclei of yeast and ciliates; DNA ribosomes
T. Warwick, M.Sc.: spawning habits of frogs and toads, spawning migrations; environmental factors causing ornamentation in Hydrobiid snails

SUB-DEPARTMENT OF PARASITOLOGY

- J. Allan Campbell, B.A., Ph.D., *Senior Lecturer-in-Charge*: population dynamics of a sheep Trichostrongylid parasite and quantitative assessments of the pathogenic effect
Mrs. K. M. G. Adam, B.Sc.: comparative physiology of Amoeae of the genus *Hartmannella*
C. Rayski, Ph.D., M.R.C.V.S.: protozoa and helminths; special interest in Acanthocephala
P. A. G. Wilson, B.Sc., Ph.D.: parasite physiology

THE EDINBURGH SCHOOL OF AGRICULTURE

University of Edinburgh Department of Agriculture

The Edinburgh and East of Scotland College of Agriculture

West Mains Road, Edinburgh 9. Tel.: Newington 1041. 'Grams.: Rural, Edinburgh

(Including SCOTTISH AGRICULTURAL ADVISORY SERVICE)

Prof. Stephen J. Watson, D.Sc., F.R.I.C., F.R.S.E., *Professor of Agriculture and Principal of the College*: conservation of forage crops

UNITED KINGDOM

M. Allan Knox, B.Sc., Dip.Agr. (Oxon.), *Senior Lecturer in Agriculture*: rural economics

AGRICULTURE AND HORTICULTURE

Lecturers in these departments are responsible for the management of the experimental farms and gardens *q.v.*

BACTERIOLOGY

- T. Gibson, D.Sc., *Head*
A. J. Holding, B.Sc., M.S. (Wis.), Ph.D.: soil bacteriology
*Miss H. E. Schefferle, B.Sc., Ph.D.: plant-pathogenic bacteria
*Mrs. A. C. Stirling, B.Sc., Ph.D.: silage
*R. Whittenbury, M.Sc., Ph.D.: lactic acid bacteria

BOTANY

- *R. G. Heddle, M.A., B.Sc., *Head*: grassland investigations
*A. E. W. Boyd, B.Sc., Ph.D., *Plant Pathologist*: potato tuber diseases
L. S. Cobley, B.Sc., A.I.C.T.A., *Senior Lecturer*
*D. S. C. Erskine, B.Sc.: weed control
P. C. Harper, B.Sc., Dip.R.Sc., Ph.D.: physiology of potatoes
*J. B. D. Herriott, B.Sc., Ph.D.: grassland investigations
*W. A. Hughes, B.Sc.: clubroot of brassicae
J. H. Lennard, B.Sc., Ph.D.: potato storage

CHEMISTRY

- A. M. Smith, D.Sc., F.R.I.C., F.R.S.E., *Head*
R. A. Edwards, B.Sc., M.Sc.: sampling and composition of milk
P. McDonald, M.Sc., Ph.D., F.R.I.C.: digestibility work
*D. Purves, B.Sc., Ph.D.: trace elements
*K. Simpson, B.Sc., A.R.I.C.: soil/plant/phosphate relationships

ECONOMICS

- *J. D. Nutt, B.A., N.D.A., *Head*
*A. Blyth, M.A.: work simplification
*B. Peart, B.A.: farm organization

VETERINARY

- *J. A. Watt, Ph.D., B.Sc., M.R.C.V.S., *Veterinary Investigation Officer in charge*: control of porcine enteritis, bovine and ovine hypomagnesaemia, diagnosis of Johne's disease, ovine abortion
*D. W. Deas, M.R.C.V.S., *Assistant Veterinary Investigation Officer*: bovine infertility
*W. S. Johnston, M.R.C.V.S., *Assistant Veterinary Investigation Officer*: gel diffusion precipitin tests in diagnosis
*N. S. M. MacLeod, B.V.M. & S., M.R.C.V.S., *Assistant Veterinary Investigation Officer*: histopathology of sheep pneumonia
Sub-station: Cleeve Gardens, Oakbank Road, Perth. Tel.: Perth 2162
*T. B. Nicolson, M.R.C.V.S., D.V.S.M., *Veterinary Investigation Officer*: louping ill

ZOOLOGY

- *E. Dunn, B.Sc.: plant nematodes, hatching studies and nematicides
W. J. Guild, B.Sc., Ph.D.: soil zoology
J. W. McHardy, B.Sc.: agricultural zoology
*A. R. McLellan, B.Sc.: biology and diseases of bees
*P. Osborne, B.Sc., M.S. (Calif.), Ph.D.: agricultural pests and their natural enemies

UNITED KINGDOM

EXPERIMENTAL FARMS AND GARDENS

Bush House, Milton Bridge, Penicuik, Midlothian. Tel.: Lothianburn 90

- J. Bruce, N.D.H., *Head of Horticulture Department*
J. M. M. Cunningham, B.Sc., *Senior Farms Manager*: pig housing and nutrition
J. Harkins, B.Sc., N.D.A.: cattle feeding economics
S. F. Hayes, B.Sc., D.I.E., F.L.S.: physical condition of soils in relation to horticultural crops
J. C. Holmes, B.Sc., M.S. (Iowa), Ph.D., *Experiments Manager*: nitrogen manuring of pasture and crops
T. H. Jackson, B.Sc., M.S. (N.C.), Ph.D.: beef and mutton carcass quality
J. M. Manson, B.Sc., M.S. (Calif.), *Poultry Unit Manager*: genetics of egg weight
M. J. Nash, M.Sc., Ph.D.: crop storage and conservation
K. V. Runcie, B.Sc., M.S. (Corn.), *Dairy Farms Manager*: cattle housing and zero grazing

ROYAL (DICK) SCHOOL OF VETERINARY STUDIES

(University of Edinburgh)

Summerhall, Edinburgh 9. Tel.: Edinburgh Newington 6801

- A. Robertson, M.A., B.Sc., Ph.D., M.R.C.V.S., F.R.I.C., F.R.S.E., *Director and Professor of Veterinary Hygiene*: metabolic diseases of ruminants
G. F. Boddie, B.Sc., M.R.C.V.S., F.R.S.E., *Professor of Veterinary Medicine*: cardio-vascular diseases
J. S. A. Spreull, Ph.D., M.R.C.V.S., *Professor of Veterinary Surgery*: urinary lithiasis
F. Alexander, Ph.D., D.Sc., M.R.C.V.S.: gastro-intestinal function in herbivores
I. S. Beattie, B.Sc., M.R.C.V.S.: pneumonia in pigs
F. J. Elliott, M.Sc., Ph.D., F.R.I.C., F.R.S.E.: cardio-vascular studies
G. S. Ferguson, B.Sc., M.R.C.V.S., D.V.S.M.: bovine brucellosis and mastitis
T. Grahame, T.D., F.R.C.V.S., F.R.S.E.: distribution of the renal artery in mammals
E. A. McPherson, M.Sc., M.R.C.V.S.: dermatomycosis in animals
E. W. Moodie, B.Sc., Ph.D., M.R.C.V.S.: mineral metabolism in ruminants
A. W. Taylor, Ph.D., D.Sc., M.R.C.V.S.: mycobacterial infections in animals and birds

UNIVERSITY OF GLASGOW

Glasgow, W.2. Tel.: Western 8855

Agriculture

- D. S. Hendrie, B.Sc.Agr. (Glas.), B.Sc.Est.Man. (Lond.), Dip.Agr.Sc. (Cantab.), N.D.A., *Professor of Agriculture*: crop and animal husbandry
(see also West of Scotland Agricultural College, page 86)

Agricultural Economics

- George F. B. Houston, M.A. (Edin.), B.Litt. (Oxon.): economics of marketing; agriculture policy and agricultural history

Botany

- J. Walton, M.A., Sc.D. (Cantab.), D.Sc. (Manc.), D.es-Sc., LL.D. (McM.), *Professor of Botany*
G. Bond, Ph.D., D.Sc. (Glas.): symbiotic nitrogen fixation
A. M. M. Berrie, B.Sc., Ph.D. (Glas.): control of growth and development in plants

UNITED KINGDOM

C. G. Elliot, B.Sc., M.Sc. (Tas.), Ph.D. (Cantab.): genetical studies of plant pathogens

S. Hutchinson, B.Sc., Ph.D. (Brist.): effects of fungal metabolites on the growth of plants

Genetics

G. Pontecorvo, Dr.Agr. (Pisa), Ph.D. (Edin.), F.R.S., *Professor of Genetics: parasexuality in fungi; genetic analysis via mitotic segregation in man*

D. A. Hopwood, M.A., Ph.D. (Cantab.): genetics of actinomycetes

Zoology

C. M. Yonge, C.B.E., D.Sc., Ph.D. (Edin.), F.R.S., *Professor of Zoology*

A. F. G. Dixon, B.Sc. (Lond.), D.Phil. (Oxon.): behaviour of aphidophagous insects and their prey

R. M. Dohson, M.A. (Cantab.), Ph.D. (Lond.): biology and distribution of slugs; taxonomy of *Carpophilus* spp. (Coleoptera)

A. Fraser, B.Sc., Ph.D. (Glas.): neurosecretion in the Insecta; digestion in Calliphoridae; diapause in *Lucilia* spp.

A. R. Hill, B.Sc., Ph.D. (St. And.): investigations into the bionomics and ecology of British members of the genus *Anthocoris* (Hem. : Anthocoridae)

Faculty of Medicine Veterinary School

W. L. Weipers, B.Sc., F.R.C.V.S., D.V.S.M., F.R.S.E., *Director of Veterinary Education and Professor of Veterinary Surgery*

Animal Husbandry and Preventive Veterinary Medicine

The relationship of lead, calcium and zinc to copper metabolism in ruminants; relationship of nutrition, pasture management and various supplements to hypomagnesaemia in sheep; ketosis in ruminants and laboratory animals; relationship of Johne's disease vaccination to the efficiency of the tuberculin test in cattle; production of mineral disease pigs; studies on the relationship of environment to growth rates in piglets.

J. S. S. Inglis, B.Sc., M.R.C.V.S., F.R.S.E., *Professor of Animal Husbandry and Preventive Veterinary Medicine*

A. J. D. Campbell, B.Sc., B.V.Sc., M.R.C.V.S.

R. G. Hemingway, M.Sc., Ph.D.

P. J. Pearce, M.Sc.

N. Ritchie, B.Sc.

Mrs. M. Weipers, M.A., M.R.C.V.S.

Hospital Pathology

Miss H. Hein, B.V.M.S., M.R.C.V.S.: pathology of poultry disease with special reference to coccidiosis

W. F. H. Jarrett, Ph.D., M.R.C.V.S.: canine and bovine lymphosarcoma with special reference to cytology and etiology; immune mechanisms in disease, including parasitic immunity

J. McLellan, B.V.M.S., M.R.C.V.S.: enzootic pneumonia in pigs

H. M. Pirie, B.V.M.S., M.R.C.V.S.: pulmonary diseases of pigs; cardiovascular disease in domestic animals

N. C. C. Sharp, B.V.M.S., M.R.C.V.S.: parasitic immunity; hepatic disease in the dog and cat

S. G. Des. Wettimuny, B.V.Sc.: canine nephritis

Veterinary Anatomy

Mrs. F. E. F. Lindsay, M.R.C.V.S.: radiographic anatomy; inflation studies on the foetal and neonatal lungs of domestic animals; blood circulation in the coronary vessels of the Fowl heart

UNITED KINGDOM

Mrs. H. J. Smith, M.R.C.V.S.: blood circulation in the coronary vessels of the Fowl heart

Veterinary Biochemistry

Radioisotopes studies on domestic animals, with particular reference to fluid volume measurements; immunological studies on domestic animals, with particular reference to helminth immunity; biochemical studies on parasitic helminths.

T. A. Douglas, B.Sc., Ph.D., M.R.C.V.S.: foetal fluids; metabolic studies on ruminants; clinical veterinary biochemistry

F. W. Jennings, B.Sc., M.Agr.

W. Mulligan, M.Sc., Ph.D.

J. T. M. Neilson, B.Sc.

Veterinary Histology and Embryology

Electron microscopy of the respiratory, reproductive and digestive tract of the domestic fowl; male accessory generative organs.

R. N. C. Aitken, M.R.C.V.S.

Miss E. Morgan, B.V.M.S., M.R.C.V.S.

Veterinary Medicine

W. I. M. McIntyre, Ph.D., M.R.C.V.S., *Professor of Veterinary Medicine*, diseases of cattle; helminth immunity

R. G. Dalton, B.V.M.S., M.R.C.V.S.: diseases of cattle; calf diarrhoea; lymphosarcoma

E. W. Fisher, B.Sc., Ph.D., M.R.C.V.S.: cardiovascular diseases of domestic animals

W. A. Greig, B.Sc., Ph.D., M.R.C.V.S.: metabolic diseases of cattle and sheep

I. M. Lauder, M.R.C.V.S.: diseases of the dog; dermatology of domestic animals

Veterinary Pathology, Parasitology and Bacteriology

J. W. Emslie, B.Sc. (Aberd.), M.R.C.V.S., *Professor of Veterinary Pathology*

R. S. F. Campbell, M.R.C.V.S.: experimental atherosclerosis of poultry; study of the neuro-pathology of canine distemper; study of the haematology of canine distemper

H. J. C. Cornwall, B.V.M.S. (Glas.): studies on canine viruses by the techniques of tissue-culture

A. M. Dunn, Ph.D. (Edin.), M.R.C.V.S.: epidemiology of helminth parasitism in British fauna

M. Grindlay, M.R.C.V.S., Dip.Bact. (Manc.): study of the pleuropneumonia-like organisms of the respiratory tract of domestic animals

J. M. Hamilton, B.V.M.S. (Glas.): study of the endocrine glands in spontaneous and experimental disease of animals

H. B. McCusker, M.R.C.V.S.: investigations into diseases of the skin in domestic animals

S. W. Michna, V.S. (Lwow), M.R.C.V.S.: serological studies in canine distemper, contagious hepatitis and leptospirosis; natural and experimental leptospirosis of pigs; serological studies on Johne's disease; studies on the incidence of *Brucella* organisms in bovine milk in the West of Scotland

J. G. O'Sullivan, M.R.C.V.S.: dermatomycosis

Veterinary Pharmacology

Factors affecting gastro-intestinal function in ruminants; actions of drugs on the CNS of domestic animals with particular reference to ataractic and stimulant drugs in the horse.

R. S. Jones, B.V.Sc., M.R.C.V.S.

J. Sanford, B.V.Sc., M.R.C.V.S.

UNITED KINGDOM

Veterinary Physiology

- R. S. Anderson, B.V.M.S., M.R.C.V.S.: acid-base balance measurements in the bovine; quantitative study of bicarbonate excretion by the bovine kidney; cystometric studies on the bovine urinary bladder
A. F. Munro, B.Sc., Ph.D., M.R.C.S. & L.R.C.P.: respiratory metabolism of normal and atheromatous vascular tissue; intestinal absorption *in vitro* of sugars and fatty acids; radio-telemetering from the gastro-intestinal tract
E. C. Pickering, B.Sc., B.V.M.S., M.R.C.V.S.: adrenocortical function in the cow with particular reference to mechanism for the urinary excretion of water and electrolytes

Veterinary Reproduction

- H. Boyd, V.M.D., M.R.C.V.S.: study of early embryonic death in cattle
P. G. Hignett, M.R.C.V.S.: diagnosis of *Brucella abortus* infection under field conditions; hydro-allantois in cattle
J. McCracken, B.V.M.S., M.R.C.V.S.: study of the progesterone levels in blood and other body tissues of cattle and dogs
L. Nagy, B.Sc.: investigations into the immunological relationship of *Brucella abortus* in cattle and sheep; isolation of causal organism of pig enzootic pneumonia—with Hospital Pathology Department
J. Renton, M.R.C.V.S.: retention of foetal membranes in cattle

Veterinary Surgery

- W. L. Weipers, B.Sc., F.R.C.V.S., D.V.S.M., F.R.S.E., *Director of Veterinary Education and Professor of Veterinary Surgery*: intestinal obstruction in dogs
J. R. Campbell, B.V.M.S., M.R.C.V.S.: developmental bone disease of dogs; anaesthesia
S. Jennings, M.R.C.V.S.: volatile anaesthesia in horses and farm animals; sex hormone levels in equidae
D. D. Lawson, M.R.C.V.S.: veterinary radiology; fracture healing in dogs; anaesthesia
A. D. Weaver, Dr.Med.Vet., M.R.C.V.S., B.Sc.: urolithiasis in farm animals

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Miss E. G. Gray, B.Sc., Ph.D.Myc.: potato diseases
J. H. Clarke, B.Sc.Hons., Ph.D.: fungi on roots

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C. Ball, B.Sc.Agr.: progeny testing

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A. C. Hunter, B.Sc.Agr.: dairy bacteriology

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A. Grant, B.Sc.Agr., Dip.Agr.Econ., A.C.W.A.: sheep
G. G. Hayes, B.Sc.Econ., N.D.A.: farm organization
A. B. K. Tracey, B.Sc.Agr., N.D.A.: fodder crop utilization

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H. F. M. Everett, B.Sc.Hort.: fruit trials
Miss M. O. Sanders, N.D.H.: floriculture

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†L. G. Donald, B.Sc.Vet.Sc., M.R.C.V.S.: sheep
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*R. M. McKenzie, M.R.C.V.S.: sheep
†G. S. Ziffo, M.R.C.V.S., B.Vet.Sc.: sheep

ZOOLOGY

- D. Robertson, D.Sc., Ph.D., B.Sc.Agr., N.D.A., *Head*: farm pests
G. M. Macintosh, B.Sc.: plant nematology

*At Mill of Craibstone Laboratories, Bucksburn, Aberdeen

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J. B. McCreath, B.Sc.Agr. (Glas.), N.D.A.: economics of hill farming

C. W. Roberts, B.Sc.Agr. (Lond.), N.D.A.: agricultural economics

R. Turner, B.Sc.Agr. (Edin.), A.I.C.T.A., M.Inst.W.S.: work study

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A. Veitch, B.Sc.Mech.Eng. (Glas.), A.M.I.Agr.E.: agricultural engineering

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R. Laird, B.Sc.Agr. (Glas.), M.S. (Ohio), Dip.Agr. (Rdg.), N.D.A., N.D.D.: genetic improvement of pigs

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Miss C. M. Laing, N.D.D.: mastitis

Miss M. J. Orr, N.D.D.: dairy hygiene

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R. C. Kirkwood, B.Sc.Agr. (Glas.), Ph.D. (Wales): bracken control

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A. J. McGregor, B.Sc.Agr. (Glas.), Ph.D. (Glas.): soil phosphates

E. K. Schofield-Palmer, B.Sc.Tech. (Manc.), A.M.C.T.: soil phosphates

R. C. Voss, B.Sc. (Lond.), A.R.I.C.: spectrographic chemistry

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A. G. Boyd, B.Sc.Agr. (Glas.): crop trials

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R. J. M. Crawford, B.Sc.Agr. (Glas.), Ph.D. (Glas.), N.D.A., N.D.D.: lactic acid organisms

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J. Frame, B.Sc.Agr. (Glas.), M.Agr.Sc. (N.Z.), Dip. Agr. (Rdg.), N.D.A.,
N.D.D.: measurement of pasture utilization

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J. S. Slater, B.Sc., Ph.D.: scrapie

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C. C. Renwick, M.R.C.V.S., D.T.V.M.: scrapie; Johne's disease; pneumonia of
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J. G. Brotherston, F.R.C.V.S., Dip.Bact., *Deputy Director and Head of Department*: scrapie; louping-ill

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N. J. L. Gilmour, B.V.M.S., Ph.D., M.R.C.V.S.: Johne's disease

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M. G. Christie, B.A.: nematodes of sheep

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R. M. Barlow, B.Sc., D.V.M. & S., M.R.C.V.S.: swayback
A. C. Gardiner, B.Sc.: scrapie

Routine Pathology

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Miss S. M. Jones, B.Sc.: bacteriology of milk and milk products

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W. Manson, B.Sc., Ph.D.: chemistry of milk proteins

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D. Reid, B.Sc.Agr., M.S., Ph.D.: dairy and grassland husbandry
J. N. Watson, N.D.D.H.: farm management

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- K. L. Blaxter, B.Sc.Agr., Ph.D., N.D.A. (Hons.), D.Sc., *Head*: energy metabolism in ruminants
D. G. Armstrong, B.Sc.Agr., Ph.D., M.Sc., F.R.I.C.: energy metabolism in ruminants
J. L. Clapperton, B.Sc., Ph.D.: energy metabolism in ruminants
A. K. Martin, B.Sc., Ph.D.: energy metabolism in ruminants
F. W. Wainman, B.Sc.Agr.: energy metabolism in ruminants

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W. Bianca, Dip.Ing.Agr., Dr.Sc.Tech. (Zurich): environmental physiology of cattle
D. McE. Jenkinson, B.Sc.: climatic effects and the histology of bovine skin
J. A. McLean, B.Sc., Ph.D.: biophysics and instrumentation
G. C. Whittow, B.Sc., Ph.D.: environmental physiology of cattle

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J. Abbot, N.D.D.T.: milk analysis and dried milk
D. T. Davies, B.Sc., Ph.D.: milk analysis and protein stability in milk
Miss M. J. Johnston, B.Sc., Ph.D.: chemistry of grass
J. C. D. White, B.Sc., Ph.D.: milk analysis and protein stability in milk

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Miss R. M. Campbell, B.Sc.: protein digestion and metabolism; effects of antivitamins

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- J. C. Gill, B.Sc.Agr.: sheep nutrition

MICROBIOLOGY

- P. N. Hobson, B.Sc., Ph.D., F.R.I.C., *Head*: the properties of rumen lipolytic bacteria and the continuous culture of rumen bacteria
T. H. Blackburn, B.A., M.Sc.: the isolation and properties of rumen proteolytic bacteria
Miss J. M. Eadie, B.Sc., Ph.D.: the development and interactions of the protozoal populations of the rumen
B. H. Howard, B.Sc., Ph.D., F.R.I.C.: biochemistry of rumen protozoa
S. O. Mann, F.I.M.L.T.: the occurrence of rumen bacteria in the environment of farm animals
Miss M. R. Purdom, B.Sc.: the isolation and properties of rumen pectinolytic bacteria

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G. C. Hunter, B.Sc.: immunity to helminths
J. Stephen, B.Sc., Ph.D.: biochemistry of bacterial toxins
F. White, B.Sc., M.R.C.V.S., B.Sc.Vet.Sc.: bacteria concerned with bovine mastitis

PHYSIOLOGY

- A. T. Phillipson, M.A., M.R.C.V.S., Ph.D., D.V.Sc.Hon., F.R.S.E., *Head*, *Deputy Director*: digestive and metabolic physiology of the ruminant
R. W. Ash, B.Sc., B.Sc.Vet.Sc., M.R.C.V.S.: reflex activity of the alimentary tract and gastric secretion
D. Benzie: in charge of radiography and photography; bone structure and dentition of sheep under various dietary conditions; vascular systems of domestic livestock
J. M. Brockway, B.Sc., Ph.D.: the design of gradient layer calorimeters; the heat output by sheep and pigs in relation to feeding, age and the temperature of the environment
E. Cresswell, B.Sc., M.S.A., Ph.D.: sheep husbandry
A. Dobson, B.A., Ph.D.: permeability of membranes, electrolyte secretion and distribution in sheep and cattle
J. G. Gordon, B.Sc.Agr., Ph.D.: animal behaviour; the factors influencing rumination
R. N. B. Kay, M.A., Ph.D.: salivation in ruminants; the physiology of the large intestine; conservation of water and electrolytes
J. D. Pullar, B.Sc., Ph.D.: the design of gradient layer calorimeters; the heat output by sheep and pigs in relation to feeding, age and the temperature of the environment

UNITED KINGDOM

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D. A. B. Young, M.A., D.Phil.: the action of insulin

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- R. L. M. Syngle, B.A., Ph.D., F.R.I.C., F.R.S., *Head*: protein and non-protein forms of bound amino acid residues in plant material, and their metabolism; physico-chemical separations

Protein Section

- F. J. Bealing, B.Sc., Ph.D.: peptides and peptidases
Miss M. I. Chalmers, B.Sc., Ph.D.: nitrogen metabolism of ruminant animals, with special reference to milk production
Glyn Jones, B.Sc., Ph.D., A.R.I.C.: proteolytic enzymes
E. I. McDougall, B.Sc., Ph.D., A.R.I.C.: proteins and immune bodies of physiological fluids; physicochemical separations; responsible for physical services of Institute
N. A. Matheson, B.Sc., Ph.D.: nitrogenous constituents of leaves

Lipid Section

- G. A. Garton, B.Sc., Ph.D., D.Sc.: lipid digestion and absorption; blood lipids; milk fat formation
A. K. Lough, A.H.-W.C., Ph.D., A.R.I.C.: lipid digestion and absorption; blood lipids; milk fat formation

STATISTICS

- A. W. Boyne, B.Sc.: statistical design and interpretation of experiments bearing on animal nutrition. (On editorial board of British Journal of Nutrition)
I. McDonald, M.A.: statistical design and interpretation of experiments bearing on animal nutrition. (On editorial board of British Journal of Nutrition)

REID LIBRARY

- J. C. R. Yeats, A.L.A.: *Librarian*

Scottish Horticultural Research Institute

- Mylnefield, Invergowrie, Dundee. Tel.: Invergowrie 441
T. Swarbrick, B.Sc., M.Sc., Ph.D., *Director*

GENETICS

- Cyto-genetical problems of adaptation in horticultural crop plants.
G. M. L. Haskell, Ph.D., D.Sc., F.I.S., *Head*
A. B. Wills, B.Sc., M.Sc.

MYCOLOGY

- Grey mould diseases of soft fruit and tomatoes; black scurf of potatoes.
A. R. Wilson, B.Sc., M.Sc., Ph.D., M.I.Biol., *Head*
W. R. Jarvis, B.Sc., Ph.D., D.I.C., M.I.Biol.

PHYSIOLOGY

- C. G. Guttridge, B.Sc., Ph.D., *Head*: developmental physiology of growth and flowering in strawberry
D. T. Mason, B.Sc., Ph.D.: physiology of growth and cropping in strawberry
P. A. Thompson, B.Sc., M.Sc.: hormone physiology of plant growth and fruit development

UNITED KINGDOM

POMOLOGY

Effect of cultural practices on yield and quality of raspberries and other fruits. Breeding for improved quality and yield in raspberries and blackcurrants and resistance to the known soil-borne viruses. The use of chemical herbicides for weed control in horticultural crops and potatoes, and studies on the persistence of herbicides in soils. Variety trials of bush, cane and tree fruits.

C. A. Wood, B.Sc., Ph.D., M.I.Biol., *Head*
M. M. Anderson, N.D.H., S.D.H., D.H.E.
W. Fordyce, S.D.H.
D. L. Jennings, B.Sc.
R. J. Stephens, B.Sc.

VEGETABLE CROPS

Variety testing and breeding of brassica, beans, carrots and other vegetables. The effect of cultural practices on the yield and quality of vegetable crops especially those grown for processing.

C. North, B.Sc., M.Sc., Ph.D., N.D.H., M.I.Biol., *Head*
L. H. Frith, B.Sc.
H. J. V. Gledhill, B.Sc.
Miss W. G. Priestley, Dip.Hort.

VIROLOGY

C. H. Cadman, B.Sc., Ph.D., F.R.S.E., *Head*
J. Cathro
J. Chambers, B.Sc.
R. M. Lister, B.Sc., Dip.Agr.Sc., D.T.A.
W. P. Mowat, B.Sc., Dip.Agr.Sc.
A. F. Murant, B.Sc., Ph.D.
C. E. Taylor, B.Sc., Ph.D.

WEST OF SCOTLAND UNIT, Auchincruive, Ayr

Breeding of strawberries with good quality and high yield and relatively resistant to attack by *Phytophthora fragariae*.

R. D. Reid, O.B.E.
Miss I. G. Montgomerie, B.Sc., Ph.D.

Scottish Plant Breeding Station (Scottish Society for Research in Plant Breeding)

Pentlandfield, Roslin, Midlothian. Tel.: Fairmilehead 2171
J. W. Gregor, C.B.E., Ph.D., D.Sc., F.R.S.E., *Director*
W. Black, Ph.D., D.Sc., F.R.S.E., *Chief Assistant*

BRASSICA CROPS

Breeding
V. E. McM. Davey, B.Sc., Ph.D.

Cytogenetics
I. H. McNaughton, B.A., D.Phil.

HERBAGE PLANTS AND GENECOLOGY

Miss Patricia J. Watson, M.A., Ph.D., *Head*: grassland genecology
F. England, B.Sc.: ryegrass breeding
Miss Helen C. M. Ness, B.Sc.: cytology
D. Ratcliffe, B.Sc., Ph.D.: ecology of hill land vegetation
A. Smith, B.Sc., Ph.D.: genecology of hill land species

UNITED KINGDOM

OATS

- D. Cameron, B.Sc., *Head*; breeding
D. W. Speed, B.Sc.: resistance to stem eelworm
G. R. White, B.Sc.: breeding

POTATOES

Breeding

- W. Black, Ph.D., D.Sc., F.R.S.E., *Head*: inheritance of resistance to *Phytophthora infestans*
J. M. Dunnett, B.Sc., Ph.D.: inheritance of resistance to *Heterodera rostochiensis*
A. W. Macarthur, B.Sc.: health of stocks
Miss Jean F. Malcolmson, B.Sc., Ph.D.: general pathology

Virus investigations

- G. Cockerham, B.Sc., Ph.D., *Head*: genetical aspects of resistance to viruses
D. A. Govier, B.Sc., Ph.D.: potato viruses
T. M. W. Davidson, B.Sc., Ph.D.: techniques and trials

NORTHERN IRELAND

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D. J. Stewart, M.Sc., N.D.D.: food; eggs; poultry

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C. Logan, B.Sc., M.I.Biol.: bacteriological plant pathology; potato black leg
C. W. R. McCreary, M.Sc., A.I.C.T.A., M.I.Biol.: potato diseases; techniques for testing varictal susceptibility
J. P. Malone, B.Sc., Ph.D., M.I.Biol.: cereal diseases; techniques for seed health examination; diseases of grasses
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H. V. Morley, B.Sc., Ph.D.: pesticide residue methods
Miss M. J. MacIntosh, B.Sc.: minerals

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H. Marr, B.Sc.: biometrics
Mrs. P. M. Morse, M.A.: biometrics
Miss J. R. Proctor, B.Sc., Dip. R.S.S.: biometrics
G. M. Weiss, B.S.A., M.S.: biometrics

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E. B. Fraser, B.S.A., M.S.A., *Assistant to Director*

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Miss D. S. Dow, B.A.: hormones
T. S. Foster, B.Sc., M.Sc., Ph.D.: hormones
G. L. Frederick, D.V.M., M.Sc.: vitamin B₁₂
P. J. Lupien, B.Sc., M.Sc., Ph.D.: cholesterol metabolism and mammalian nutrition
W. E. J. Phillips, B.Sc., M.Sc., Ph.D.: metabolism of vitamin A
F. Sauer, D.V.M., M.Sc., Ph.D.: metabolic disorders; silica urolithiasis
W. R. Settle, B.Sc.: histochemistry
F. A. Vandenheuvel, Ph.D.: blood lipids
J. S. Willmer, M.A., Ph.D.: hormones and metabolic pathways

GENETICS SECTION

- R. S. Gowc, B.S.A., M.S., Ph.D., *Chief of Section*: avian genetics and physiology of reproduction

CANADA

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C. G. Hickman, B.S.A., M.S., Ph.D.: dairy cattle genetics and artificial insemination
K. G. Hollands, B.A., B.S.A., M.S.A.: avian physiological genetics
J. F. Kidwell, B.S., Ph.D.: *Drosophila* and mouse genetics
F. K. Kristjansson, B.S.A., M.S., Ph.D.: swine and biochemical genetics
E. S. Merritt, B.Sc.Agr., M.Sc., Ph.D.: avian genetics

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D. P. Heaney, B.S., M.S., Ph.D.: mammalian nutrition
W. G. Hunsaker, B.S.A., M.S.A., Ph.D.: avian physiology
J. R. Hunt, B.S.A., Ph.D.: avian physiology
G. I. Pritchard, B.Sc.Agr., M.S., Ph.D.: physiology of ruminant nutrition
K. A. Winter, B.Sc.Agr., M.Sc., Ph.D.: ruminant nutrition and microbiology

Food Research Institute

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M. S. Chan, B.Sc. (Wash.), M.Sc., Ph.D. (Mass.): food processing
A. B. Durkee, B.Sc. (Acadia), M.Sc. (West.): food storage, chemistry
W. E. Ferguson, B.S.A. (Tor.), M.Sc. (Mich.): food storage, microbiology
W. R. Phillips, B.S.A., M.S.A. (Tor.): food storage, fruits and vegetables
P. A. Poapst, B.Sc., B.Sc.Agr. (McG.): food storage, fruits and vegetables
A. R. Yates, B.S.A., M.S.A. (O.A.C.): food storage, microbiology
I. R. Siddiqui, Ph.D. (Birm.): carbohydrate chemistry (honey)
Miss Mary E. McKilligan, B.Sc. (Man.), M.S. (Minn.), Ph.D. (McG.): lipids

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C. A. Gibson, B.S.A., M.S.A., *Technologist*: dairy sanitation
W. A. McGugan, B.S.A., M.S., Ph.D., *Chemist*: isolation of Cheddar flavour components

Entomology Research Institute

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W. J. Brown, B.A. (Kans.), M.Sc. (Okla.): taxonomy of Coleoptera
H. F. Howden, B.S., M.S. (Md.), Ph.D. (N.C.): taxonomy of Coleoptera
J. G. T. Chillcott, B.S.A. (Tor.), Ph.D. (Kan.): taxonomy of Diptera
J. F. McAlpine, B.S.A. (Tor.), M.Sc. (Ill.): taxonomy of Diptera
G. E. Shewell, B.Sc., M.Sc. (McG.): taxonomy of Diptera
J. R. Vockeroth, B.S., M.A. (Sask.), Ph.D. (Oxon.): taxonomy of Diptera

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Miss L. K. Smith, B.Sc. (Alta.), M.Sc., Ph.D. (Wis.): taxonomy of Hymenoptera
G. S. Waller, B.S.A. (Tor.), M.Sc. (Iowa): taxonomy of Hymenoptera
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Miss B. N. A. Hudson, B.Sc., Ph.D. (Lond.): insect physiology
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J. G. Robertson, B.Sc. (Man.), M.A., Ph.D. (Br. Col.): insect genetics
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Miss L.-Y. Wu, B.S., M.S. (Lingnan), Ph.D. (McG.): morphology and taxonomy of nematodes
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R. Boch, Dr. rer.nat. (Munich): bee behaviour
B. Furgala, B.S.A., M.Sc. (Man.), Ph.D. (Minn.): ecology of honey bees
P. S. Corhet, B.Sc. (R'dg.), Ph.D. (Cantab.): biting fly ecology

Genetics and Plant Breeding Research Institute

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R. V. Clark, B.Sc.Agr., M.Sc. (McG.), Ph.D. (Wis.): plant pathology cereal crops
P. L. Dyck, B.S.A., M.Sc. (Man.), Ph.D. (Calif.): genetics and breeding of oats
F. Gfeller, B.S.A. (Tor.), M.Sc. (McG.): genetics and breeding of wheat and field peas
J. G. R. Loiselle, B.Sc.Agr., M.Sc. (McG.), Ph.D. (Wis.): genetics and breeding of barley

CANADA

- W. G. McGregor, B.S.A. (Tor.), M.S. (Minn.), Ph.D. (Iowa): genetics and breeding of oilseeds, field beans and buckwheat
H. Miller: wheat quality
A. G. Plessers, B.Sc.Agr. (McG.), M.S., Ph.D. (Minn.): genetics and breeding of oilseeds and field beans
T. Rajhathy, Ing.Agr., M.Sc., D.Agr.Sc. (Bud.): cytogenetics, species relationships in *Avena* and *Hordeum*
E. B. Wagenaar, Ing.Agr. (Wag.), Ph.D. (Alta.): cytogenetics
F. J. Zillinsky, B.S.A., M.Sc. (Sask.), Ph.D. (Iowa): genetics and breeding of oats and barley; interspecific hybridization in *Avena*.

FORAGE CROPS SECTION

- W. R. Childers, B.Sc.Agr. (McG.), M.S., Ph.D. (Wis.), Head: genetics and breeding of grasses and legumes
L. S. Donovan, B.S.A. (Tor.), M.S., Ph.D. (Neb.): genetics and breeding of *Zea mays* and soybeans
S. O. Fejer, Ing.Agr. (Zur.): statistical genetics, forage crops
L. P. Folkins, B.Sc.Agr. (McG.): pasture research
H. A. McLennan, B.S.A. (Tor.), M.S. (Minn.): genetics and breeding of legumes
Miss B. E. Murray, B.S.A., M.Sc. (Sask.), Ph.D. (Corn.): radiation genetics
R. W. Robertson, B.S.A. (Tor.): plant introduction
H. Therrien, B.A. (Laval), L.S.A. (Montr.), M.Sc., Ph.D. (Wis.): plant physiology, winter hardiness

HORTICULTURAL CROPS SECTION

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A. T. Bolton, B.Sc., M.Sc., Ph.D. (West Ont.): plant pathology horticultural crops
D. F. Cameron, B.S.A. (Tor.): genetics and breeding of *Lilium*, *Malus* and *Philadelphus*
J. B. Julien, B.Sc.Agr. (Laval), M.Sc. (McG.), Ph.D. (Tor.): plant pathology fruit crops
V. W. Nuttall, B.S.A. (Man.), M.S. (Corn.): genetics and breeding of cucumber, sweet corn and eggplant
D. R. Sampson, B.Sc. (Acadia), A.M., Ph.D. (Harv.): cytogenetics, incompatibility
L. P. S. Spangelo, B.S.A., M.Sc. (Man.): genetics and breeding of apple, strawberry and raspberry
Miss F. J. Svejda, Ing.Agr., Doktor der Bodenkultur (Vienna): genetics and breeding of *Rosa* and *Phlox*

DEVELOPMENTAL RESEARCH SECTION

- R. M. MacVicar, B.S.A., M.Sc. (McG.), Head: grass breeding, seed production
L. M. Casserly, B.A. (St. Pat's.), B.S.A., M.Sc. (McG.): agronomic trials of cereals and forage plants
C. B. Dalton, B.S.A. (McG.): agronomic trials of cereals and forage plants
D. R. Gibson, B.Sc.Agr. (McG.): grass breeding
G. Provencher, B.A. (Laval), B.Sc.Agr. (McG.): agronomic trials of forage plants

LIPID RESEARCH SECTION

- R. P. A. Sims, B.Sc., Ph.D. (McG.), Head: lipid chemistry

Microbiology Research Institute

- Central Experimental Farm, Ottawa
H. Katzenelson, B.S.A., M.Sc., Ph.D., F.R.S.C., Director
F. D. Cook, B.S.A., M.S.A., Ph.D.: legume, soil bacteria

CANADA

- J. W. Rouatt, B.S.A., M.Sc., Ph.D.: rhizosphere, bacteria
E. A. Peterson, B.Sc., M.Sc., Ph.D.: rhizosphere, fungi
I. L. Stevenson, B.S.A., M.Sc., Ph.D.: bacterial physiology, nutrition
D. C. Gillespie, B.S.A., M.Sc.: bacterial physiology, nutrition
H. B. Gunner, B.S.A., M.Sc., Ph.D.: bacterial physiology, nutrition
R. M. Hochster, B.Sc., Ph.D.: bacterial biochemistry
S. M. Lesley, B.Sc., M.A., Ph.D.: bacterial biochemistry
N. B. Madsen, B.Sc., M.Sc., Ph.D.: bacterial biochemistry, enzymology
G. B. Landerkin, B.S.A., M.Sc.: antibiotics, culture collection
I. Takahashi, B.A., M.Sc., Ph.D.: genetics, taxonomy
V. N. Iyer, B.Sc., M.Sc., Ph.D.: genetics, taxonomy
A. G. Lochhead, B.A., M.Sc., Ph.D., F.R.S.C.: bacterial nutrition

Plant Research Institute

Central Experimental Farm, Ottawa

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W. E. Cordukes, B.Sc., M.Sc.: agricultural meteorology
R. M. Holmes, B.Sc., Ph.D.: agricultural meteorology
K. H. MacKay, B.Sc., M.Sc., Ph.D.: agricultural meteorology
*G. W. Robertson, B.Sc., M.A.: agricultural meteorology
*G. D. V. Williams, B.Sc.: agricultural meteorology
Mrs. R. M. Arnold, B.A., M.Sc.: fungus taxonomy
G. D. Darker, B.A., M.A., Ph.D.: fungus taxonomy
Miss M. E. Elliott, B.A.: fungus taxonomy
J. W. Groves, B.A., M.A., Ph.D., F.R.S.C.: fungus taxonomy
S. J. Hughes, B.Sc., M.Sc., D.Sc., F.I.S.: fungus taxonomy
W. B. Kendrick, B.Sc., Ph.D.: fungus taxonomy
Miss R. Macrae, B.A., M.Sc., Ph.D.: fungus taxonomy
C. Madhosingh, B.S.A., M.A., Ph.D.: forest mycology—chemistry
D. D. McLain, B.Sc., M.Sc., Ph.D.: forest mycology
Miss M. K. Nobles, B.A., M.A., Ph.D.: forest mycology
J. A. Parmelee, B.Sc.Agr., M.A., Ph.D.: fungus taxonomy
Miss M. E. Pantidou, B.Sc., M.Sc., Ph.D.: fungus taxonomy
D. B. O. Savile, B.S.A., M.Sc., Ph.D.: fungus taxonomy
R. A. Shoemaker, B.S.A., M.Sc., Ph.D.: fungus taxonomy
Miss L. K. Weresub, B.A., M.A., Ph.D.: forest mycology
L. A. Cabana, B.A., B.S.A.: seed physiology
B. G. Cumming, B.Sc., Ph.D.: seed physiology
J. E. Fisher, B.S.A., M.Sc., Ph.D.: environmental physiology
D. J. C. Friend, B.Sc., Ph.D.: environmental physiology
V. A. Helson, B.A., M.A.: environmental physiology
E. T. McEvoy, B.Sc.Agr., M.Sc.: plant nutrition
S. R. Miller, B.Sc., M.Sc.: plant nutrition
W. J. Saidak, B.S.A., M.Sc., Ph.D.: weed physiology and control
F. D. H. Macdowall, B.Sc., M.Sc., Ph.D.: physiology
E. V. Parups, M.Sc., Ph.D.: physiology
R. Pringle, B.Sc., M.Sc., Ph.D.: biochemistry of growth and development
D. Siminovitch, B.Sc., M.Sc., Ph.D.: winter hardiness
J. C. Sirois, B.A., B.Sc., M.Sc., Ph.D.: physiology
J. J. Wilner, B.S.A., M.Sc., Ph.D.: winter hardiness
P. K. Basu, B.Sc., M.Sc., Ph.D.: seed-borne bacteria
L. N. Chiykowski, B.S.A., M.Sc., Ph.D.: plant virology
D. W. Creelman, B.Sc.Agr.: plant disease survey
P. E. Lee, B.Sc., M.Sc., Ph.D.: plant virology

*Seconded from Meteorological Branch, Department of Transport

CANADA

- L. Seaman, B.Sc., Ph.D.: seed-borne diseases
J. G. Shaw, B.Sc.A., Ph.D.: plant virology
J. T. Slykhuis, B.Sc.A., M.Sc., Ph.D.: plant virology
R. M. D. Sutton, B.A., M.A., Ph.D.: seed-borne bacteria
H. S. Thompson, B.Sc., M.A., Ph.D.: ornamental diseases
V. R. Wallen, B.Sc.Agr., M.Sc., Ph.D.: seed-borne diseases
J. F. Alex, B.Sc.A., M.Sc., Ph.D.: weed ecology
I. J. Bassett, B.A.: taxonomy
B. Boivin, B.A., L.Sc., Ph.D.: taxonomy
W. M. Bowden, B.A., Ph.D.: cytogenetics
J. A. Calder, B.Sc.: taxonomy
W. J. Cody, B.A.: taxonomy
W. G. Dore, B.A., M.Sc., Ph.D.: taxonomy
C. Frankton, B.Sc., Ph.D.: taxonomy
J. M. Gillett, B.A., Ph.D.: taxonomy
S. I. Khan, B.Sc., M.Sc., Ph.D.: plant introduction—cytology
R. J. Moore, B.A., M.A., Ph.D.: cytogenetics
G. A. Mulligan, B.Sc.Agr.: cytobotany
A. R. T. Buckley: ornamentals
A. P. Chan, B.Sc.Agr., M.Sc., Ph.D.: glasshouse floriculture
E. J. Walker, B.Sc.Agr., B.Land.Arch.: landscape architecture

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H. Morita, B.Sc., Ph.D.: organic matter
K. C. Ivarson, B.Sc., M.Sc., Ph.D.: microbiology
A. J. MacLean, B.Sc., M.Sc., Ph.D.: fertility
B. J. Finn, B.Sc.A., M.Sc., Ph.D.: fertility
R. L. Halstead, B.Sc.A., Ph.D.: fertility
A. R. Mack, B.Sc.A., M.Sc., Ph.D.: fertility
R. C. Turner, B.Sc.A., M.Sc., Ph.D.: physical chemistry
D. T. Chen, B.Eng., M.Sc., Ph.D.: physical chemistry
W. E. Nichol, B.A.Sc., M.A.Sc.: physical chemistry
E. J. Evans, B.Sc., M.Sc., Ph.D.: radioactive studies
S. A. Forman, B.A., M.A.: crystallography
J. E. Brydon, B.Sc., M.Sc., Ph.D.: mineralogy
H. M. Rice, B.A.: mineralogy
M. Schnitzer, B.Sc.A., M.Sc., Ph.D.: genesis and classification
J. S. Clark, M.Sc.A., Ph.D.: genesis and classification
J. A. McKeague, B.A., B.Sc.A., M.Sc., Ph.D.: genesis and classification
J. H. Day, B.Sc.A., M.Sc.A.: classification and survey
W. J. Staple, B.Sc., M.Sc., Ph.D.: physics
S. J. Bourget, B.Sc., M.Sc., Ph.D.: physics

Entomology Research Institute for Biological Control

Box 367, Belleville, Ontario. Tel.: WO 8-671. 'Grams: Entlab, Belleville

- B. P. Birne, B.Sc., M.A., M.Sc., Ph.D., *Director*
N. H. Anderson, B.Sc.A., M.Sc., Ph.D.: predatory Hemiptera
A. P. Arthur, B.Sc.Agr., M.Sc., Ph.D.: host selection of parasites
G. L. Ayre, B.Sc.A., M.Sc.A.: predation by ants
J. S. Barlow, B.Sc.A., M.A., Ph.D.: insect biochemistry
P. Belton, B.Sc.: insects and sounds

CANADA

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Miss J. F. Bronskill, B.A., Ph.D.: insect histology and embryology
G. E. Bucher, B.A., M.A., Ph.D.: insect pathology
T. Burnett, B.S.A., Ph.D.: experimental population ecology
C. D. Dondale, B.Sc.Agr., M.Sc., Ph.D.: spiders
Mrs. T. U. Finlayson, B.A.: insect identifications and taxonomy
A. R. Graham, B.S.A., M.Sc.: parasites of crop insects
P. Harris, B.Sc.F., Ph.D.: biological control of weeds
H. L. House, B.S.A., Ph.D.: insect physiology and nutrition
H. G. James, B.A., M.A.: predators of biting flies
J. A. Juillet, B.Sc.App.For., M.Sc.For., Ph.D.: parasite activity
J. S. Kelleher, B.Sc., M.Sc., Ph.D., *Importation Officer*: applied biological control
K. Leicus, B.A., Dr.rer.nat.: food preferences of parasitic insects
C. C. Loan, B.A., M.S., Ph.D.: forage crop insects
J. M. Mackauer, Dr.phil.nat.: parasites of aphids
M. G. Maw, B.Sc.: insects and atmospheric electricity
L. G. Monteith, B.S.A., M.S.A.: parasite-host preferences
D. F. Riordan: insects and radioactivity
I. Rivard, B.A., B.Sc.Agr., M.Sc.: predation by carabids
B. C. Smith, B.A.: behaviour of predatory beetles
R. W. Smith, B.S.A.: grasshopper parasites
Miss J. M. Stephens, B.Sc., M.A., Ph.D.: biochemical mechanisms of immunity
A. L. Turnbull, B.Sc.F., M.Sc.F., Ph.D.: predation by spiders
H. E. Welch, B.A., M.A., Ph.D.: entomophagous nematodes
H. G. Wylie, B.A., Ph.D.: population ecology

Pesticide Research Institute

Research Branch, University Sub-Post Office, London, Ontario
Tel.: GE 8-8375

- E. Y. Spencer, M.Sc., Ph.D., F.C.I.C., *Director*
C. L. Hannay, B.S.A., Ph.D., D.I.C.: bacterial physiology, cytology and electron microscopy
E. B. Roslycky, M.Sc., Ph.D.: microbiology and virology
D. M. Miller, M.Sc., Ph.D.: physical chemistry
T. Dumas, Chem. Eng., M.Sc.: analytical chemistry
R. M. Krupka, B.A., M.A., Ph.D.: enzyme kinetics
J. R. Robinson, M.S.A., Ph.D.: radioactive tracers
A. Stoessl, B.Sc., Ph.D.: organic chemistry
G. D. Thorn, B.Sc., M.A., Ph.D., F.C.I.C.: organic chemistry
A. Vardanis, B.Sc., M.Sc., Ph.D.: comparative toxicology
R. W. White, B.Sc., M.Sc.: organic chemistry and infrared analysis
W. Chefurka, B.Sc., M.Sc., Ph.D.: insect biochemistry and physiology
B. E. Brown, B.Sc., M.Sc., Ph.D.: insect physiology and toxicology
E. H. Colhoun, B.S.A., Ph.D.: insect physiology and toxicology
J. E. Steele, B.Sc., M.Sc., Ph.D.: insect physiology and toxicology
H. A. U. Monroe, B.S.A., M.Sc., Ph.D.: fumigation
E. J. Bond, B.S.A., M.Sc., Ph.D., D.I.C.: fumigation and toxicology
E. Upitis, B.S.A.: fumigation
F. R. Forsyth, B.A., Ph.D.: plant pathology
L. T. Richardson, B.A., M.A., Ph.D.: plant pathology
E. W. B. Ward, B.Sc., M.Sc., Ph.D.: plant pathology
W. A. Andreac, B.Sc.Agr., M.Sc., Ph.D.: plant physiology
W. H. Minshall, B.S.A., M.Sc., Ph.D.: plant physiology
N. E. Good, B.A., Ph.D.: plant physiology

CANADA

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O. A. Olsen, B.S.A., M.Sc., Ph.D.; potato diseases
A. F. Rayment, B.Sc., M.Sc.; forage crops and cereals
N. Rosa, B.Sc., M.Sc.; vegetable crops

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R. D. Crawford, B.S.A., M.S.; poultry genetics
A. D. L. Gorrell, B.S.A., M.Sc.; dairy cattle management

Crops Section

- W. N. Black, B.Sc.Agr., *Head*; forage crops
K. E. Lelacheur, B.Sc.; forage crops and tobacco
R. B. McLaren; cereal breeding
J. D. E. Sterling, B.S.A., M.S.; cereal breeding

Entomology and Plant Pathology Section

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L. C. Callbeck, B.Sc.Agr.; potato blight control
J. E. Campbell, B.Sc., M.Sc.; potato diseases
F. M. Cannon, B.Sc., M.Sc.; barley jointworm; potato insects

CANADA

D. C. Read, B.Sc., M.Sc.: root maggots in crucifers
L. S. Thompson, B.Sc., Ph.D.: vegetable insects

Soil Section

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D. C. Munro, B.S.A., M.Sc.: soil fertility

DOMINION EXPERIMENTAL FUR RANCH, Summerside. Tel.: 2513

C. K. Gunn, B.Sc., M.Sc., Ph.D. (Tor.), *Superintendent*: nutrition of mink and foxes

Nova Scotia

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Chemistry Section

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C. R. MacEachern, B.Sc.: soil analysis
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L. R. Townsend, B.A., B.Sc.: plant analysis

Crops Section

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A. D. Crowe, B.S.A., M.Sc., Ph.D.: stone fruits
R. P. Longley, B.S.A., M.S.A.: apples and pears
G. G. Smeltzer, B.Sc.Agr.: field crops and project farms

Plant Pathology Section

R. G. Ross, D.F.C., B.Sc.Agr., M.Sc., Ph.D., *Chief*: fruit diseases
K. A. Harrison, E.D., B.S.A., M.Sc.: vegetable diseases
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C. O. Gourley, C.D., B.Sc.Agr.: soil microbiology

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F. G. Proudfoot, B.Sc.Agr., M.Sc., *Chief*: poultry genetics

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C. A. Eaves, B.Sc., M.Sc.Agr., *Chief*: physiology, storage

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E. E. Gardiner, B.S., M.S., Ph.D.: poultry
J. W. G. Nicholson, B.Sc.Agr., M.Sc., Ph.D.: cattle and sheep
R. E. Smith, B.Sc.Agr., M.Sc.Agr.: poultry

Cereal and Forage

F. S. Warren, B.S.A., M.Sc., Ph.D., *Head*
J. E. Langille, B.Sc.Agr.: forage crops
H. A. Riordon, B.S.A.: cereal crops

Field Husbandry and Soil Fertility

E. T. Goring, B.S.A., *Head*
L. P. Jackson, B.Sc.Agr., M.Sc.: soil physics
L. B. MacLeod, B.S.A., M.Sc.: soil fertility

Project Farms

F. W. Calder, B.Sc.Agr., M.S., *Head*

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RESEARCH STATION, Fredericton. Tel.: 506-475-7741
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L. Grigsbach, B.S.A., M.Sc.: poultry
R. J. Curtis, B.S.A., M.S.A.: animal husbandry

Entomology and Plant Pathology

Mrs. J. B. Adams, B.A., M.Sc.: field crop insects
R. H. E. Bradley, B.Sc., Ph.D.: insect transmission of plant viruses
Mrs. M. E. MacGillivray, B.A., M.Sc., D.Sc.: aphid systematics and biology
R. H. Bagnall, B.Sc.Agr., M.Sc., Ph.D.: potato virus diseases
J. P. MacKinnon, B.Sc.Agr., M.Sc.: potato virus diseases
W. T. A. Neilson, B.Sc., M.Sc.: fruit insects
C. W. B. Maxwell, B.S.A., M.Sc.: apple maggot biology
J. W. McAllan, B.Sc., M.Sc., Ph.D.: insect physiology

Field Crops

E. A. Grant, B.Sc.Agr., M.Sc.: forage crops
T. C. Chiasson, B.Sc.Agr., M.Sc.: cereals
C. F. Everett, B.Sc.Agr., M.Sc.: agronomy and weeds
J. E. Comeau, B.Sc.Agr.: field crop nutrition and culture

Horticulture Section

R. G. White, B.S.A.: fruits and vegetables
W. B. Collins, B.Sc.Agr., M.Sc., Ph.D.: small fruits and plant physiology
W. G. Barker, B.Sc., M.Sc., Ph.D.: blueberry physiology and ecology
D. D. Pond, B.Sc.: vegetable insect investigations
G. T. Morgan, B.Sc., M.Sc.: nematodes and strawberry insects
G. W. Wood, B.Sc., M.A.: blueberry insects

CANADA

Potato Breeding Section

- L. C. Young, B.A., B.S.A., M.Sc.: potato breeding
D. A. Young, B.Sc.Agr., M.Sc., Ph.D.: genetics
H. T. Davies, B.S.A.: quality studies
W. A. Hodgson, B.Sc.Agr., M.Sc.: potato diseases (late blight)
C. H. Lawrence, B.S.A., M.Sc.: potato diseases (common scab)
K. M. Graham, B.S.A., Ph.D.: potato diseases (late blight)
J. Munro, B.Sc., M.Sc.: potato virus
O. T. Page, B.S.A., M.Sc., Ph.D.: potato physiology
L. A. Dionne, B.Sc., M.Sc.: cytogenetics

Soils Section

- A. A. MacLean, B.Sc., M.Sc., Ph.D.: soil chemistry
J. J. Doyle, B.Sc.Agr., M.Sc., Ph.D.: soil physics
J. F. G. Millette, B.S.A., M.Sc., Ph.D.: pedology and soil survey
K. K. Langmaid, B.Sc., M.Sc.: pedology and soil survey
J. K. MacMillan, B.S.A.: pedology and soil survey

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R. G. White, B.S.A., *Officer-in-Charge*

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L. C. Young, B.A., B.S.A., M.Sc., *Officer-in-Charge*

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J. A. Allard, B.S.A.: tobacco
J. A. Bélanger, B.S.A.: soils
J. S. F. Coiteux, B.S.A.: cereals, weed control
C. E. Ste. Marie, B.S.A.: fruits
J. J. N. Laliberté, B.S.A., M.Sc.: vegetables
C. E. Ouellet, B.A., B.S.A., M.Sc.: European elm disease and agrometeorology
R. Martincau, B.A., B.S.A., M.Sc.: forage plants
M. Zawalsky, B.S.A., M.Sc.: poultry breeding

HORTICULTURAL ORGANIC SOILS SUBSTATION, Ste. Clotilde de Chateauguay

J. J. Jasmin, B.Sc.Agr., M.Sc., *Officer-in-Charge*

TOBACCO SUBSTATION, Lavaltrie

R. Bordeleau, B.S.A., *Officer-in-Charge*

EXPERIMENTAL FARM, Lennoxville. Tel.: Lorraine 7-4228

- G. J. Brisson, B.A., B.S.A. (Laval), M.Sc. (McG.), Ph.D. (Ohio), *Superintendent*
C. S. Bernard, B.S.A. (Laval), M.Sc., Ph.D. (Wis.): animal science—breeding
C. D. T. Cameron, B.S.A., M.Sc. (McG.): animal science—nutrition
G. Lalande, B.A., B.S.A. (Montr.): animal science management
J. O. P. Allard, B.S.A. (Laval): Experimental Project Farms—special crops
P. O. Roy, B.S.A. (Montr.): Experimental Project Farms—apples
P. Gervais, B.S.A. (Laval), M.Sc. (McG.), Ph.D. (Wis.): plant science—legumes and pastures
C. E. L. Lachance, B.A., B.S.A. (Laval), M.Sc. (McG.): plant science—grasses
A. E. Ouellette, B.S.A. (Montr.): plant science—cereals

CANADA

J. L. Dionne, B.A., B.S.A. (Laval), Ph.D. (Wis.): soil science—fertility
W. S. Richardson, B.S.A. (Tor.): soil science—management

NORMANDIN EXPERIMENTAL FARM

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L. Dufour, B.S.A. (Laval), M.Sc. (Wis.): animal husbandry
J.-M. Girard, B.A., B.Ph., B.S.A. (Laval), M.S.A. (Tor.): forage crop breeding

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F. Darisse, B.A., B.Sc.Agr., *Assistant*: cereal and forage crops

RESEARCH LABORATORY, P.O. Box 457, St. Jean

A. A. Beaulieu, B.S.A., M.Sc., *Officer-in-Charge*
J. L. Auclair, B.S.A., M.Sc., Ph.D.: pea aphid nutrition and physiology
E. J. LeRoux, B.A., M.Sc., Ph.D.: apple orchard insect ecology and control
B. Parent, B.A., B.Sc.Agr., M.Sc.: apple orchard mite ecology and control
R. O. Paradis, B.Sc.Agr., M.Sc.: apple orchard insect ecology and control
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J. P. Perron, B.S.A.: onion maggot ecology and control
J. J. Cartier, B.A., B.Sc., M.Sc., Ph.D.: pea aphid ecology
M. Hudon, B.S.A., M.Sc.: European corn borer ecology and control
J. Lafrance, B.S.A.: wireworms ecology and control
J. Cinq-Mars, B.A., B.S.A., M.Sc.: apple orchard diseases and control
R. Crête, L.S.A., M.Sc.: vegetable diseases and control

RESEARCH STATION, Ste. Anne de la Pocatiere. Tel.: 975

J. C. Perrault, B.S.A., M.Sc., D.Sc., *Director*
J. P. Lemay, B.A., B.S.A., M.Sc.: animal husbandry; sheep and dairy cattle
L. Dessureaux, B.A., B.S.A., M.Sc., Ph.D.: genetics and plant breeding; alfalfa
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G. J. Ouellette, B.A., B.S.A., Ph.D.: soil fertility; trace elements
R. Baril, L.Sc.A., M.Sc.: pedology and soil survey
R. O. Lachance, B.A., B.S.A., M.Sc., Ph.D.: forage crop diseases; histopathological studies
H. Généreux, B.A., B.S.A., M.Sc.: potato diseases; epidemiology and control
J. Santerre, B.A., B.Sc.A., M.Sc.: potato diseases; epidemiology
R. A. Lachance, B.Sc., M.Sc., Ph.D.: microbiology; nutrition of plant pathogens
M. Lepage, B.A., B.S.A., Ph.D.: plant biochemistry; factors of disease resistance
R. Paquin, B.A., B.S.A., M.Sc., Ph.D.: plant physiology; host-parasite relationship
A. Hamel, B.A., B.S.A., M.Sc.: botany; ecological studies
G. R. Couture, B.S.A., M.Sc.: entomology; disease dissemination by insects

Ontario

ENTOMOLOGY LABORATORY, P.O. Box 488, Chatham

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H. B. Wressell, B.S.A.: corn and forage crop insects
J. A. Begg, B.S.A., M.Sc.: wireworms, cutworms, tobacco insects

CANADA

H. D. Niemczyk, B.S., M.S., Ph.D.: vegetable insects
J. A. Mutchmor, B.Sc., M.S., Ph.D.: physiology
C. R. Harris, B.A., M.A., Ph.D.: toxicology
C. A. Barlow, B.A., M.A., Ph.D.: ecology
R. J. McClanahan, B.A., M.Sc.: vegetable insects
J. R. W. Miles, B.Sc.: analytical chemistry

TOBACCO SUBSTATION, P.O. Box 820, Delhi. Tel.: 1115
L. S. Vickery, B.S.A. (Tor.), M.S. (Mich.), *Officer-in-Charge*
J. M. Elliot, B.S.A., M.S.A. (Tor.), *Research Officer*: soil-tobacco plant nutrient relations
B. Povilaitis, B.S.A. (Lithuania), M.Sc., Ph.D. (McG.), *Research Officer*: genetics and plant breeding
E. K. Walker, B.S.A. (Tor.), M.S. (Mich.), *Research Officer*: irrigation, curing and maturity

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L. Burgess, B.Sc., M.Sc., *Entomologist*: mosquitoes
B. V. Peterson, B.S., M.S., Ph.D., *Entomologist*: black flies
C. C. Steward, B.A., M.A., Ph.D., *Entomologist*: insect morphology and physiology
H. J. Teskey, B.Sc., M.S.A., *Entomologist*: tabanids and the face fly

RESEARCH STATION, P.O. Box 370, Harrow. Tel.: Regent 3-2251
L. W. Koch, B.A., M.A., Ph.D., *Director*
H. F. Murwin, B.S.A., *Associate Director*

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H. R. Boyce, B.S.A., M.S.A., *Head*: peach and greenhouse insects
W. H. Foott, B.S.A., M.S.A., Ph.D.: orchard insect ecology
R. D. McMullen, B.Sc., M.S.: physiological insect ecology

Nematology Section

W. B. Mountain, B.Sc., Ph.D., *Head*: nematodes
R. M. Sayrc, B.S., M.S., Ph.D.: nematodes

Plant Breeding and Genetics Section

Field Crops
C. G. Mortimore, B.S.A., M.S., *Head*: corn and soybeans
G. H. Clark, B.Sc., M.S., Ph.D.: white beans and cereal crops
R. J. Haslam, B.S.A.: tobacco
C. W. Owen, B.S.A.: soybeans
W. A. Scott, B.S.A.: tobacco

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G. M. Weaver, B.Sc., Ph.D., *Head*: cytogenetics
L. F. Ounsworth, B.S.A., M.Sc.: vegetables
T. K. Toyama, B.Sc., Ph.D.: fruit and vegetable varietal improvement

Plant Pathology Section

C. D. McKeen, B.A., M.A., Ph.D.: vegetable diseases
Z. A. Patrick, B.Sc., Ph.D.: soil toxins and tobacco diseases
R. N. Wensley, B.S.A., Ph.D.: soil microbiology

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G. M. Ward, B.Sc., M.A., Ph.D.: nutrition; greenhouse crops

Soil Science Section

J. M. Fulton, B.Sc., M.Sc., Head: field husbandry and irrigation
W. I. Findlay, B.Sc., M.Sc., Ph.D.: soil fertility

Poultry

W. F. Mountain, B.Sc. (West.), Ph.D. (Tor.)

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L. A. Charette, B.S.A. (Tor.), M.S., Ph.D. (Minn.): animal breeding
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P. P. Dermine, L.S.A. (Montr.), M.Sc. (McG.): forage and cereal crops
J. R. Lessard, B.A., B.S.A. (Laval), M.S. (Minn.): forage conservation
H. J. Knutti, Ing. Agr. (Zur.), M.Sc. (McG.): forage and pasture studies
H. A. Hamilton, B.Sc.Agr., M.Sc. (McG.): soil chemistry
M. Lévesque, B.S.A. (Laval), M.Sc. (Tor.): soil fertility

EXPERIMENTAL FARM, Smithfield

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W. M. Rutherford, B.S.A., M.Sc.: crop management
W. P. Mohr, B.S.A., M.Sc.: food processing
H. D. Madill, B.S.A., M.Sc.: genetics and plant breeding

RESEARCH LABORATORY, Vineland Station

(Formerly: Plant Pathology Laboratory, St. Catharines; Entomology Laboratory, Vineland; and Entomology Substation, Simcoe.)

D. A. Chant, B.A., M.A. (Br. Col.), Ph.D. (Lond.), Officer-in-Charge and Head, Entomology Section: biological control of orchard insects; taxonomy of Phytoseiidae (Acarina)

Entomology Section, Vineland Station. Tel.: Logan 2-5252

G. G. Dustan, B.S.A. (Tor.), M.S. (Minn.): oriental fruit moth ecology
R. W. Fisher, B.Sc.Agr., Ph.D. (McG.): insecticides
J. A. George, B.S.A. (Sask.), M.Sc. (Tor.): field studies on stone fruit viruses
D. H. C. Hrone, B.A. (West.), M.Sc. (Tor.): orchard mites
J. H. H. Phillips, B.S.A. (Tor.), M.Sc., Ph.D. (McG.): ecology and control, scale insects on stone fruits
W. L. Putman, B.S.A., M.Sc. (Tor.): ecology of orchard fauna
A. B. Stevenson, B.Sc.Agr., M.Sc., Ph.D. (Wis.): ecology and control of grape phylloxera

Entomology Sublaboratory, Box 458, Simcoe. Tel.: Garfield 6-1870

A. Hikichi, B.A., B.S.A., M.Sc. (Tor.): ecology and control of red-banded leaf roller on apple

Plant Pathology Section, Box 506, St. Catharines. Tel.: Mutual 4-6212

R. S. Willison, B.A., M.A. (McM.), Ph.D. (Tor.), Head of Section: physico-chemical characterization of stone fruit viruses
W. Allen, B.A., Ph.D. (Corn.): virus diseases of fruit
J. F. Bradbury, B.Sc., Ph.D. (Lond.): host-parasite relationships of fungal pathogens
G. C. Chamberlain, B.S.A. (Tor.): fruit diseases
T. R. Davidson, B.Sc.Agr., M.Sc. (Alta.): field studies on stone fruit viruses

CANADA

W. G. Kemp, B.A., M.A. (McM.): diseases of glasshouse ornamentals
J. L. Townshend, B.S., M.Sc. (McM.): nematology
J. H. Tremaine, B.Sc., M.Sc. (McM.), Ph.D. (Pitts.): serological characterization of stone fruit viruses

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E. F. Bolton, B.S.A., M.S.A.: field husbandry

Manitoba

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R. D. Dryden, B.Sc., M.Sc.: soil and crop management
W. S. Ferguson, B.S.A., M.Sc., Ph.D.: soil fertility
B. J. Gorby, B.S.A.: agronomy
A. T. H. Gross, B.S.A., M.Sc.: forage crops
J. C. M. L'Arrivee, B.S.A., M.Sc., Ph.D.: apiculture
M. W. M. Leo, B.Sc., M.S., Ph.D.: soil physics
D. R. Metcalfe, B.S.A., M.Sc., Ph.D.: barley genetics
G. W. Rahnefeld, B.S., M.S., Ph.D.: animal genetics
J. H. Strain, B.S.A., M.Sc., Ph.D.: poultry genetics
C. Whitehead, B.S.A., M.Sc., Ph.D.: plant physiology—weeds

SOILS AND CROPS SUBSTATION, Wabowden

P. Braun, B.S.A., *Officer-in-Charge*

EXPERIMENTAL FARM, Morden

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R. B. Hyde, B.S.A., M.S.: food technology
W. A. Cumming, B.S.A.: ornamentals
E. D. Putt, B.S.A., M.Sc., Ph.D.: sunflowers
J. Giesbrecht, B.S.A., M.Sc., Ph.D.: corn and soybeans
J. A. Hoes, B.S.A., M.Sc.: pathology
I. H. Tyson, B.Sc., M.Sc., Ph.D.: flax and peas
C. Walkof, B.S.A., M.Sc., Ph.D.: vegetables
B. B. Chubey, B.S.A., M.Sc.: vegetable nutrition
M. Kawase, Ph.D.: physiology

SPECIAL CROPS SUBSTATION, Portage La Prairie

W. O. Chubb, B.Sc., D.Sc., *Officer-in-Charge*

RESEARCH STATION, P.O. Box 6200, Winnipeg 1. Tel.: GI 3-0523

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R. G. Anderson, B.S.A., M.Sc., Ph.D.: genetics
V. M. Bendelow, B.Sc.: cereal quality
K. W. Buchannon, B.S.A., M.Sc., Ph.D.: barley
A. B. Campbell, B.S.A., M.Sc., Ph.D.: common wheat
E. R. Kerber, B.S.A., M.Sc., Ph.D.: cytology

CANADA

D. Leisle, B.S.A., M.Sc.: durum wheat
R. J. H. McKenzie, B.S.A., M.Sc., Ph.D.: oats

Entomology Laboratory

R. D. Bird, B.Sc., M.Sc., Ph.D., *Head*: ecology
W. R. Allen, B.Sc., M.Sc., Ph.D.: toxicology, physiology
B. Berck, B.S.A., M.Sc.: chemistry
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S. R. Loschiavo, B.Sc., M.Sc.: fumigant toxicity
H. P. Richardson, B.S.A., M.Sc.: aster yellows virus vectors
W. Romanow, B.S.A., M.Sc.: grasshopper surveys and ecology
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L. B. Smith, B.Sc., M.S.A., Ph.D.: ecology of grain insects
F. I. Watters, B.Sc., M.Sc.: stored product insects
P. H. Westdal, B.Sc., M.Sc.: aster yellows virus vectors

Plant Pathology Laboratory

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W. C. McDonald, B.S.A., M.S., Ph.D.: foliar diseases of cereals
J. E. Machacek, B.S.A., M.S.A., Ph.D.: fungicides
R. Rohringer, Ph.D.: fungal enzymology, cereal rusts
D. J. Samborski, B.S.A., M.Sc., Ph.D.: cereal rusts
H. A. H. Wallace, B.Sc., M.Sc.: seed-borne diseases of cereals

Seed Distribution, Federal Building, Room 518, 269 Main St., Winnipeg. Tel.: Wh. 2-3128

A. B. Masson, B.S.A., M.Sc., *Head*: cereal seed distribution

Manitoba Soil Survey, Plant Science Department, University of Manitoba, Fort Garry. Tel.: Gr. 4-9354

W. A. Ehrlich, B.S.A., M.S., Ph.D., *Head*: pedology and soil survey
W. Michalyna, B.S.A., M.Sc.: pedology and soil survey
L. E. Pratt, B.S.A., M.Sc.: pedology and soil survey

Saskatchewan

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breeding bacon hogs
A. P. Piloski, B.S.A. (Manit.), *Research Officer*: poultry genetics

Agronomy

E. V. McCurdy, B.S.A. (Sask.), *Research Officer*: fertilizers, rotations and weed control
E. Buglass, B.S.A. (Sask.), *Research Officer*: perennial crops on saline soils
R. N. McIver, B.S.A. (Sask.), *Research Officer*: crop production and rotations

Soils

E. D. Spratt, B.S.A., M.Sc. (Sask.), *Research Officer*: crop management; cereal crops

CANADA

D. A. Duncan, B.S.A., M.Sc. (Manit.), *Research Officer*: crop management; horticultural crops

FOREST NURSERY STATION, Indian Head. Tel.: 857

W. H. Cram, B.S.A., M.Sc., Ph.D., *Superintendent*: tree breeding and nursery production
L. O. T. Peterson, B.Sc., M.Sc., *Entomologist*: shelterbelt and nursery insect problems
R. Grover, B.Sc., M.Sc., Ph.D., *Physiologist*: herbicidal toxicity and seed viability
P. J. Salisbury, B.S.A., *Pathologist*: nursery diseases in saline soils and in storage
R. H. Rollins, *Technician*: tree storage and distribution

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W. K. Dawley, B.Sc.A.: soil fertility and pasture research
H. R. Ballantyne, B.S.A.: cereal crops
D. A. Cooke, B.S.A., M.Sc.: forage crops and pasture research
S. E. Beacom, B.Sc.Agr., M.Sc., Ph.D.: animal nutrition and pasture research
K. E. Bowren, B.S.A.: tillage and cropping
R. E. Laurin, B.A., B.S.A.: weed research

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J. D. Banting, B.S.A., M.Sc., Ph.D.: weed physiology
E. A. Hurd, B.S.A., M.Sc., Ph.D.: wheat breeding
J. R. Hay, B.S.A., M.Sc., Ph.D.: weed physiology

RESEARCH STATION, University Sub. P.O., Saskatoon

M. W. Cormack, B.S.A., M.Sc., Ph.D., F.A.I.C., F.R.S.C., *Director*
H. McDonald, B.S.A., M.Sc., Ph.D.: chemical control of grasshoppers
A. R. Brooks, B.A., M.Sc.: insect systematics
R. H. Burrage, B.S.A., Ph.D.: wireworms
C. H. Craig, B.A.: forage crop insects
G. R. F. Davis, B.Sc., M.Sc., Ph.D.: insect nutrition
J. F. Doane, B.S.A., M.Sc., Ph.D.: wireworms
A. B. Ewen, B.A., M.A., Ph.D.: forage crop insects
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H. A. McMahon, B.S.A., M.Sc.: forage crop insects
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L. G. Putnam, B.S.A., M.Sc.: rapeseed insects
P. W. Riegert, B.A., M.Sc., Ph.D.: grasshoppers
W. W. A. Stewart, B.Sc.: vegetable insects
M. E. Taylor, B.S.A.: crop insect control
R. Y. Zacharuk, B.S.A., M.Sc.: wireworms
J. L. Bolton, B.S.A., M.Sc., Ph.D.: alfalfa breeding
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B. P. Goplen, B.S.A., M.Sc., Ph.D.: legume breeding
R. P. Knowles, B.S.A., M.Sc., Ph.D.: grass breeding
L. G. Sommor, B.S.A.: irrigation crops
S. H. F. Chinn, B.Sc., M.Sc., Ph.D.: soil microbiology
R. J. Ledingham, B.Sc., M.Sc.: cereal root diseases
H. W. Mead, B.Sc., M.Sc., Ph.D.: forage crop diseases

CANADA

B. J. Sallans, B.S.A., B.A., M.Sc., Ph.D.: cereal root diseases
R. D. Tinline, B.A., M.Sc., Ph.D.: cereal root diseases

SASKATCHEWAN SOIL SURVEY, University of Saskatchewan, Saskatoon

J. S. Clayton, B.S.A., M.Sc.: pedology and soil survey
C. J. Acton, B.S.A., M.Sc.: pedology and soil survey
D. F. Acton, B.S.A., M.Sc.: pedology and soil survey
A. K. Ballantyne, B.S.A., M.Sc.: pedology and soil survey
J. G. Ellis, B.S.A., M.Sc.: pedology and soil survey
W. J. Janzen, B.S.A., M.Sc.: pedology and soil survey
H. B. Stonehouse, B.S.A.: pedology and soil survey

EXPERIMENTAL FARM, Scott

R. G. Savage, B.S.A., M.Sc., *Superintendent*
H. K. Cressman, B.A., M.A., Ph.D.: soil chemistry
W. L. Crowle, B.S.A., M.Sc.: forage and cereal crops
D. H. Dabbs, B.Sc., M.Sc.: potatoes
D. E. Forsberg, B.S.A., M.Sc.: weeds
C. H. Keys, B.S.A.: soil management
W. E. Rauser, B.Sc.Agr., M.Sc.Agr.: plant physiology
H. Ukrainetz, B.S.A.: soil fertility

FOREST NURSERY STATION, Sutherland Sub. P.O., Saskatoon. Tel.: 343-8855

W. L. Kerr, B.S.A. (Tor.), M.Sc. (Md.), *Officer-in-Charge*: horticulture and forestry

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G. N. Denike, B.S.A., *Superintendent*

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J. L. Thompson, B.E., M.E., *Chief*: experimental machine development
F. W. Bigsby, B.Sc., M.Sc., Ph.D.: farm power
M. E. Dodds, B.E.: harvest equipment engineering
R. E. Melvin, B.E.: hydrology
K. Pohjakas, B.S.A., M.S.A.: drainage engineering

Cereal Section

D. S. McBean, B.S.A., M.Sc., *Cerealist*: winter rye breeding

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P. J. Janzen, B.S.A., *Supervisor*
G. K. Harris, B.Sc., *Agronomist*

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R. Ashford, B.S.A., M.Sc.: biochemistry—bloat studies
M. R. Kilcher, B.S.A.: forage crop culture
T. Lawrence, B.S.A., M.Sc., Ph.D.: plant breeding

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J. B. Campbell, B.Sc.Agr., *Chief*: range management
R. W. Lodge, B.S.A., M.Sc., Ph.D.: range ecology
P. I. Myhr, B.S.A.: animal husbandry
J. E. Troelsen, B.Sc., M.Sc.: range nutrition

Poultry Nutrition Section

R. M. Blakely, B.S.A., *Chief*: poultry nutrition
H. I. MacGregor, B.S.A., M.S.A.: poultry nutrition

CANADA

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- K. F. Nielsen, B.Sc., Ph.D., *Chief*: soil temperature studies
K. F. Best, B.S.A.: weed investigations
F. Bisal, B.A., M.Sc.: soil physics—erosion
P. Chandra, B.Sc., M.Sc., Ph.D.: microbiology
W. C. Hinman, B.Sc., M.Sc.: soil chemistry
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J. J. Lehane, B.S.A., M.S.A.: soil physics—moisture
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T. P. Decie, M.A.: silviculture, Prince George District
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A. L. Van Slyke, B.Sc., M.F., *Associate Professor of Forestry*: forest mensuration and statistical methods

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D. R. Arnott, B.S.A. (Manit.), M.Sc. (Minn.), Ph.D. (Penn.): processing and merchandizing bottled milk
D. A. Biggs, B.Sc. (Sask.), M.S.A.: study of the methods of analysis and physical properties of milk
D. H. Bullock, B.S.A., M.S.A., Ph.D. (Wis.): dried milk products
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R. Grinnell, B.Sc. (Iowa), M.Sc. (Minn.): instrumentation and control
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R. W. Irwin, B.S.A. (Tor.), M.S. (Iowa): drainage
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W. S. Young, B.S.A., M.S.A., Ph.D. (Corn.): regional testing of cereals, maize and forage crops

DEPARTMENT OF HORTICULTURE

- R. J. Hilton, B.Sc.Agr. (McG.), Ph.D. (Lond.): Head of Department: anatomical and growth periodicity studies in relation to vegetative propagation practices
B. Barabas, Ing.Agr. (Bud.): chemical tests for quality control in horticultural products
M. H. Dickson, B.Sc.Agr. (McG.), M.S. (Mich.), Ph.D. (Mich.): genetic studies in male sterility (*Daucus carota*) and rootstock resistance (*Lactuca* in var.)
W. D. Evans, B.Sc.Agr. (Alta.), M.Sc. (Alta.): haploidy induction in *Fragaria* and *Rubus*

CANADA

- E. W. Franklin, B.S.A., M.S.A. (Tor.): storage of horticultural produce in relation to tissue metabolism
R. Goodwin-Wilson, B.S.A. (Tor.): introduction and culture of commercial floricultural crops
T. O. Graham, B.S.A. (Tor.), M.S. (Minn.): chromosome mapping in *Lycopersicum*; sex life in cucumbers
C. E. McNinch, B.S.A. (Tor.): nutrition and growth characteristics of nursery plants in canisters of various soil types
J. C. Taylor, R.H.S. Cert., Dip. (Kew): interspecific hybridization in *Lilium*
E. Terasmae, B.Agr. (Tartu-Estonia), M.Agr. (Tartu), D.Agr. (Tartu): deficiencies and excesses of trace elements in horticultural crop production
B. J. E. Teskey, B.S.A., M.S.A. (Tor.): rootstock and cultural investigations with deciduous tree fruits
H. Tiessen, B.S.A. (Tor.), M.S. (Mich.), Ph.D. (Mich.): physiology of vegetable plants
C. G. Waywell, B.S.A. (Sask.), M.Sc. (Sask.): herbicide investigations with horticultural crops
A. Zitnak, Ing.Agr. (Bratislava), M.Sc. (Alta.), Ph.D. (Alta.): biochemical investigations in quality control; fresh and processed horticultural produce

DEPARTMENT OF MICROBIOLOGY

- E. H. Garrard, B.S.A., M.S.A. (Tor.), F.A.P.I.H.A., *Head of Department*: bacterial diseases of plants
G. W. Anderson, B.S.A. (Tor.), M.Sc. (Dalhousie), Ph.D. (Texas): value of antibiotics in fowl nutrition
F. E. Chase, B.S.A., M.S.A. (Tor.), Ph.D. (McG.): soil microbiology studies
C. T. Corke, B.Sc., M.Sc. (West. Ont.), Ph.D. (Rutgers): microbiology of forest soils
J. D. Cunningham, B.S.A., M.S.A. (Tor.): microbiological studies on cheese
R. J. Douglas, B.S.A., M.S.A. (Tor.), Ph.D. (Mich.): serological studies on *Streptomyces* spp.
N. A. Epps, B.S.A., M.S.A. (Tor.): avian blood studies
K. F. Gregory, B.S.A. (Br. Col.), M.Sc., Ph.D. (Wis.): origin and nature of variation in *Streptomyces scabiei*
D. C. Jordan, B.S.A., M.S.A. (Tor.), Ph.D. (Mich.): physiology of the root nodule bacteria
L. A. McDermott, B.S.A., M.S.A. (Tor.): studies on furunculosis in fish
J. B. Robinson, B.S.A., M.S.A. (Tor.): actinophage studies on *Streptomyces* spp.
R. E. Smith, B.S.A., M.S.A. (Tor.): fermentation studies on thin stillage
M. L. Wright, B.S.A., M.S.A. (Tor.): salmonellosis in fowl

DEPARTMENT OF NUTRITION

- H. D. Braniion, O.O.-N., B.A., M.A., Ph.D. (Tor.), *Head of Department*: animal and poultry nutrition
D. Arthur, B.S.A., M.S.A. (Tor.): analytical chemistry; trace elements in animal nutrition
E. V. Evans, B.A., M.A. (West. Ont.): analysis and metabolism of vitamins; mink nutrition
D. C. Hill, B.S.A., M.S.A. (Tor.), Ph.D. (Minn.): proteins and amino acids in poultry and animal nutrition
K. J. Jenkins, B.Sc. (McG.), M.Sc. (Sask.), Ph.D. (Wis.): nutritional aspects of muscular dystrophy
I. Motzok, B.S.A., M.S.A., Ph.D. (Tor.): minerals in animal nutrition; enzymes
Miss Ellen M. Olsen, B.Sc. (Copen.), M.S.A. (Tor.): protein and amino acids in poultry nutrition
I. R. Sibbald, B.Sc. (Leeds), M.Sc., Ph.D. (Alta.): factors affecting energy metabolism in poultry nutrition

CANADA

DEPARTMENT OF PHYSICS AND MATHEMATICS

- E. B. MacNaughton, B.A., M.A., Ph.D. (Tor.), *Head of Department*: electronic and general instrumentation
G. C. Ashton, B.S.A. (Tor.), M.Sc. (McG.), Ph.D. (N.C.): methodology in experimental statistics
R. S. Gage, B.S.A. (Tor.), M.S.A. (Tor.), Ph.D. (Iowa): biophysics—fundamental studies of metabolite movement in the vascular system of plants
J. R. Stevens, B.A., M.A., Ph.D. (Tor.): high polymer studies at the rubber-to-glasslike transitions
R. H. Stinson, B.S.A. (Tor.), M.S.A. (Tor.), Ph.D. (West. Ont.): hiophysics—haemodynamics and vasomotor control of blood vessels

DEPARTMENT OF POULTRY SCIENCE

- J. R. Cavers, M.S. (Minn.), *Head of Department*: economic studies
G. W. Friars, M.Sc., Ph.D. (Purdue): genetic studies of turkeys and pilot organisms
C. M. Huntsman, B.S.A. (Tor.): research in poultry genetics
F. N. Jerome, M.S.A. (Tor.), Ph.D. (Corn.): in charge of research in poultry genetics
H. L. Orr, M.S. (Penn.): studies of poultry products technology
W. F. Pepper, M.S.A. (Tor.): research in poultry nutrition
S. J. Slinger, M.S.A. (Tor.), Ph.D. (Corn.): in charge of research in poultry nutrition
E. S. Snyder, M.S. (Wis.): in charge of research in poultry products technology
J. P. Walker, M.S. (Penn.): studies of poultry management
C. M. Winget, Ph.D. (Calif.): in charge of research in avian physiology

DEPARTMENT OF SOIL SCIENCE

- N. R. Richards, B.S.A., M.S. (Mich.), *Head of Department*: pedology; soil genesis and morphology
T. E. Bates, B.S.A., M.S. (N.C.), Ph.D. (Iowa): soil fertility; potassium release in soils as affected by drying
T. J. Heeg, B.S.A., M.S.A.: soil fertility; control of soil reaction, calcium fertility and liming in relation to yields and nutrient content of crops
J. W. Ketcheson, B.S.A., M.S. (Ill.), Ph.D. (Ill.): soil fertility; soil nutrient behaviour in relation to plant nutrition
K. M. King, B.S.A., M.S. (Wis.), Ph.D. (Wis.): agrometeorology; studies of physical environment of field crops
A. F. MacKenzie, B.S.A. (Sask.), M.Sc. (Sask.), Ph.D. (Corn.): soil chemistry; clay mineralogy and chemical reactions of major plant nutrients in the soil
B. C. Matthews, B.S.A., A.M. (Mo.), Ph.D. (Corn.): soil fertility; chemistry of soil in relation to nutrient availability for plant growth
M. H. Miller, B.S.A., M.S. (Purdue), Ph.D. (Purdue): soil fertility; relationships between plant growth and nutrient absorption by crops
R. W. Sheard, B.S.A. (Sask.), M.S.A.: soil fertility, mineral nutrition and growth of forage crops
J. A. Smith, B.S.A., M.S.A.: soil fertility; the development and calibration of soil testing methods
L. R. Webber, B.S.A., M.S. (Corn.): soil physics; soil physical conditions as affected by crops, crop rotations, and soil erosion
A. L. Willis, B.S.A., M.S. (Wis.), Ph.D. (Wis.): soil chemistry; chemistry of organic soils and study of trace elements

DEPARTMENT OF ZOOLOGY

- W. E. Heming, B.S.A. (Tor.), Ph.D. (Corn.), *Head of Department*: bionomics and control of livestock insects

CANADA

- W. C. Allan, C.D., B.S.A. (Tor.), M.S.A. (Tor.): livestock and vegetable insects
A. H. Berst, B.A. (West. Ont.), M.A. (Tor.): fisheries biology and management
A. T. Cringan, B.Sc.F. (Tor.), M.A. (Tor.), R.P.F.: biology of waterfowl; relationships between wildlife management and other land uses
A. deVos, M.S. (Wis.), Ph.D. (Wis.), F.A.Z.: population dynamics and behaviour of mammals and birds; animal control methods; biography
S. E. Dixon, B.A. (McM.), M.S.A. (Tor.), Ph.D. (Corn.): physiology of insect growth and development
H. W. Goble, B.S.A. (Tor.), M.S. (Iowa): root maggots of vegetable crops
A. J. Musgrave, B.Sc. (Lond.), M.Sc. (Lond.), Ph.D. (McM.), A.R.C.S., D.I.C. (Lond.): insect microbiology, toxicology, and pathology; granary and rice weevils
H. R. McCrimmon, B.A. (McM.), Ph.D. (Tor.): experimental aquatic zoology; fisheries biology and management
A. G. McNally, C.D., B.A. (West. Ont.), M.A. (West. Ont.): bionomics of boxelder bug and European earwig
J. G. Oughton, B.A. (Tor.), Ph.D. (Tor.): aquatic gastropods
R. H. Ozburn, B.S.A. (Tor.), M.S. (Minn.), F.E.S.A., F.A.A.A.S.: timber, household and industrial pests
D. H. Pengelly, B.Sc. (Alta.), M.S.A. (Tor.), Ph.D. (Corn.): taxonomy and ecology of the Apoidea and Sphecoidea (Hymenoptera)
K. Ronald, B.Sc., M.Sc., Ph.D. (McG.), M.I. Biol.: experimental parasitology; zoonoses

Kemptville Agricultural School

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- A. M. Barr, B.S.A. (Tor.): *Principal*
R. E. Class, B.S.A. (Tor.): horticultural crops
J. A. Dalrymple, B.S.A. (Tor.): livestock breeding and management
O. R. Irvine, B.S.A., M.S.A. (Tor.): dairy products processing
D. E. Logsdail, B.Sc., M.S.A. (Tor.): soil fertility
A. M. Morphet, B.S.A. (Tor.): poultry breeding and production
F. J. Parish, B.S.A. (Tor.): land improvement
D. L. Parks, B.S.A. (Tor.): crop management

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- E. L. Woodley, B.S.A. (Tor.): *Director*
C. S. Baldwin, B.S.A., M.S.A. (Tor.): soil fertility
R. Frank, B.Sc.Agr., Dip.Agr. (Cantab.), D.T.A. (Trin.): weed control studies in horticultural crops
D. G. Luckham, B.S.A. (Tor.): poultry nutrition
J. A. MacDonald, B.S.A. (Tor.): livestock management
W. W. Snow, B.S.A., M.S.A. (Tor.): crop management

Ontario Veterinary College

Guelph. Tel.: TA2-2330

- T. L. Jones, D.V.M., M.Sc., H.A.R.C.V.S., *Principal*

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- J. H. Ballantyne, D.V.M., M.S., *Professor and Head of Department*

Division of Gross Anatomy

- H. Herchen, Dr.med.vet., *Assistant Professor*
B. M. McCraw, B.A., M.A., Ph.D., *Associate Professor*
O. W. Sack, D.V.M., *Assistant Professor*

CANADA

Division of Microscopical Anatomy

J. P. W. Gilman, B.V.Sc., *Professor and Head of Division*
Mrs. P. K. Basur, B.Sc., M.Sc., Ph.D., *Assistant Professor*
P. M. Mann, B.Sc., M.Sc., *Assistant Professor*

DEPARTMENT OF MEDICINE AND SURGERY

J. A. Henderson, D.V.M., M.S., *Professor and Head of Department*

Division of Medicine

D. C. Blood, B.V.Sc., *Professor and Head of Division*

Division of Animal Reproduction

C. A. V. Barker, D.V.M., M.Sc., D.V.Sc., *Professor and Head of Division*
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DEPARTMENT OF PARASITOLOGY

A. A. Kingscote, D.V.M., D.V.Sc., *Professor and Head of Department*
D. J. Campbell, M.R.C.V.S., *Associate Professor*
J. K. McGregor, D.V.M., M.Sc., D.V.P.H., M.R.S.H., *Associate Professor*

DEPARTMENT OF PATHOLOGY AND BACTERIOLOGY

D. L. T. Smith, D.V.M., Ph.D., *Professor and Head of Department*

Division of Pathology

T. J. Hulland, D.V.M., Ph.D., *Associate Professor*
K. V. Jubbs, B.V.Sc., M.S., Ph.D., *Professor*
B. J. McSherry, D.V.M., M.S.A., *Associate Professor*

Division of Bacteriology

D. A. Barnum, D.V.M., D.V.Sc., D.V.P.H., *Professor and Head of Division*
N. A. Fish, D.V.M., D.V.P.H., *Associate Professor*
R. J. Humble, B.A., D.V.M., *Associate Professor*
D. G. Ingram, D.V.M., M.V.Sc., Ph.D. *Assistant Professor in Research*
F. H. S. Newbould, B.S.A., M.S.A., *Associate Professor in Research*
Miss R. Saison, *Research Scientist*
M. Savan, D.V.M., M.S., Ph.D., *Associate Professor in Research*
C. G. Wills, D.V.M., *Associate Professor*

Division of Zoonoses and Diseases of Wildlife

L. H. A. Karstad, D.V.M., M.S., Ph.D., *Associate Professor and Head of Division*

DEPARTMENT OF PHYSIOLOGICAL SCIENCES

H. G. Downie, D.V.M., M.V.Sc., M.S., Ph.D., *Professor and Head of Department*
W. Medway, B.Sc., D.V.M., Ph.D., *Research Associate and Assistant Professor*
J. F. Mustard, M.D., Ph.D., *Consultant to the Department*

Division of Physiology

Mrs. A. M. Bier, B.A., M.Sc., *Laboratory Scientist*
C. R. Cameron, B.A., D.V.M., M.S.A., *Associate Professor*
A. R. Graham, B.Sc., M.Sc., Ph.D., *Associate Professor*
J. I. Raeside, B.Sc., M.S., Ph.D., *Associate Professor*

Division of Pharmacology

W. T. Oliver, D.V.M., M.Sc., Ph.D., *Professor and Head of Division*

Division of Pathological Physiology

H. C. Rowsell, D.V.M., Ph.D., D.V.P.H., *Professor and Head of Division*
Miss A. McCarter, B.A., *Laboratory Scientist*
Mrs. P. E. Riddell, B.Sc., *Laboratory Scientist*
G. A. Robinson, B.Sc., M.Sc., Ph.D., *Assistant Professor*

CANADA

THE UNIVERSITY OF MANITOBA

Faculty of Agriculture and Home Economics

Winnipeg 19, Manitoba. Tel.: Grover 49-295

J. R. Weir, B.S.A., M.Sc., Ph.D., *Dean of Faculty of Agriculture and Home Economics*

DEPARTMENT OF AGRICULTURAL ECONOMICS AND FARM MANAGEMENT

S. Sinclair, B.S.A., M.Sc., Ph.D., *Professor and Head*: policy

G. Ackerman, B.S., M.Sc., Ph.D., *Research Associate*: farm management

G. R. Anderson, B.S., M.Sc., *Assistant Professor*: production economics

J. C. Gilson, B.S.A., M.Sc., Ph.D., *Associate Professor*: production economics

G. Hallett, B.A., M.A., *Associate Professor*: policy

J. P. Hudson, B.S.A., *Research Associate*: farm management

A. W. Wood, B.A., B.S.A., M.Sc., Ph.D., *Associate Professor*: marketing

M. H. Yeh, B.S., M.Sc., Ph.D., *Assistant Professor*: econometrics

DEPARTMENT OF AGRICULTURAL ENGINEERING

H. M. Lapp, B.E., *Associate Professor and Head*: irrigation and drainage, soil conservation, farm structures

K. W. Domier, B.E., M.Sc., *Assistant Professor*: farm power and machinery

DEPARTMENT OF ANIMAL SCIENCE

E. W. Stringam, B.Sc., M.Sc., Ph.D., *Professor and Head*: animal genetics and reproductive physiology

G. C. Hodgson, B.S.A., M.Sc., Dip.Ed., *Associate Professor*: poultry nutrition

P. A. Kondra, B.S.A., M.Sc., Ph.D., *Associate Professor*: poultry genetics and reproductive physiology

J. A. McKirdy, B.S., M.Sc., B.Ed., *Chemist*: analytical methods

G. D. Phillips, B.V.Sc., B.Sc., M.R.C.V.S., *Assistant Professor*: animal physiology

W. K. Roberts, B.S., M.Sc., Ph.D., *Assistant Professor*: ruminant nutrition

A. Savage, B.S.A., D.V.M., M.R.C.V.S., *Research Associate*: animal pathology and histology

M. E. Seale, B.Sc., M.Sc., Ph.D., *Associate Professor*: animal genetics

J. L. Sell, B.S., M.Sc., Ph.D., *Assistant Professor*: animal nutrition

N. E. Stanger, B.S.A., D.V.M., *Assistant Professor*: bovine mastitis

S. C. Stothers, B.S.A., M.Sc., Ph.D., *Associate Professor*: animal nutrition

DEPARTMENT OF DAIRY SCIENCE

J. M. Nesbitt, B.S.A., M.Sc., Ph.D., *Professor and Head*: dairy plant management

C. H. McNaughton, B.S.A., M.Sc., *Assistant Professor*: quality tests for raw milk

A. Reinart, B.S.A., M.Sc., *Research Associate*: composition of milk

DEPARTMENT OF ENTOMOLOGY

A. J. Thorsteinson, B.S.A., Ph.D., *Professor and Head*: insect behaviour and physiology

W. Hancc, B.S.A., M.Sc., Ph.D., *Assistant Professor*: insect physiology

C. S. Jay, B.A., B.S.A., M.Sc., Ph.D., *Assistant Professor*: bee research

A. G. Robinson, B.S.A., M.Sc., Ph.D., *Associate Professor*: insect taxonomy and ecology

DEPARTMENT OF PLANT SCIENCE

L. H. Shebeski, B.S.A., M.Sc., *Professor and Head*: plant breeding and genetics

D. T. Canvin, B.S.A., M.Sc., Ph.D., *Research Associate*: plant physiology

L. E. Evans, B.S.A., M.Sc., Ph.D., *Research Associate*: cytogenetics

CANADA

- A. C. Ferguson, B.S.A., M.Sc., Ph.D., *Professor*: horticulture
G. Friesen, B.S.A., M.Sc., Ph.D., *Associate Professor*: weed research
S. B. Helgason, B.S.A., M.Sc., Ph.D., *Professor*: plant breeding and genetics (cereals)
F. W. Hougen, B.C.E., Ph.D., *Research Chemist*: biochemistry
B. C. Jenkins, B.Sc., M.Sc., Ph.D., *Professor, the Samuel Rosner Chair in Agronomy*: genetics
O. P. Kamra, M.S., B.Sc., Ph.D., *Post-doctorate Fellow*: cytogenetics
Mrs. S. K. Kamra, B.Sc., M.Sc., Ph.D., *Research Associate*: chemistry
L. J. La Croix, B.S.A., M.Sc., Ph.D., *Research Associate*: plant physiology
J. A. Menzies, B.S.A., *Assistant Professor*: horticulture
R. C. McGinnis, B.Sc., M.Sc., Ph.D., *Associate Professor*: cytogenetics
B. Peturson, B.S.A., M.Sc., Ph.D., *Research Associate*: plant pathology
B. R. Stefansson, B.S.A., M.Sc., *Research Associate*: plant breeding (oil seeds)
Miss A. K. Storgaard, B.S.A., M.Sc., Ph.D., *Assistant Professor*: plant breeding (forage)
J. D. Truscott, B.A., B.S.A., M.Sc., Ph.D., *Associate Professor*: plant breeding (forage)
A. M. Unrau, B.S.A., M.S.A., Ph.D., *Research Chemist*: organic chemistry
J. Walker, B.Sc., M.S., *Research Associate*: horticulture
J. N. Welsh, B.S.A., M.Sc., *Research Associate*: plant breeding (cereals)

DEPARTMENT OF SOIL SCIENCE

- R. A. Hedlin, B.S.A., M.Sc., Ph.D., *Professor and Head*: soil fertility
G. J. Racz, B.S.A., M.Sc., *Research Assistant*: soil fertility
A. O. Ridley, B.S.A., M.Sc., *Lecturer*: soil management
R. J. Soper, B.A., B.S.A., M.Sc., Ph.D., *Assistant Professor*: soil chemistry and soil fertility
M. A. Zwarich, B.A., B.S.A., M.Sc., Ph.D., *Assistant Professor*: soil classification and soil mineralogy
W. A. Ehrlich, B.S.A., M.Sc., Ph.D., (Federal Department of Agriculture) *Senior Pedologist*: soil survey and soil research
W. Michalyna, B.S.A., M.Sc., (Federal Department of Agriculture) *Pedologist*: soil classification
L. E. Pratt, B.S.A., M.Sc., (Federal Department of Agriculture) *Pedologist*: soil survey and cartography
F. P. Leclair, B.S.A., M.Sc., (Provincial Department of Agriculture) *Pedologist*: soil survey and cartography
R. E. Smith, B.S.A., M.Sc., (Provincial Department of Agriculture) *Pedologist*: soil survey and soil research

UNIVERSITY OF SASKATCHEWAN

Faculty of Agriculture

Saskatoon. Tel.: Ch 2-7671
J. W. T. Spinks, M.B.E., Ph.D., D.Sc., F.R.S.C., *President of the University*
V. E. Graham, B.S.A., M.Sc., Ph.D., F.A.I.C., *Dean, Faculty of Agriculture*: microbiology

DEPARTMENT OF AGRICULTURAL MECHANICS

- O. L. Symes, B.A., B.E., *Associate Professor of Agricultural Engineering*: machinery design
D. H. Beach, B.E., *Assistant Professor of Agricultural Engineering*: motors and lubricants
E. B. Moysey, B.E., M.Sc., *Assistant Professor of Agricultural Engineering*: buildings

CANADA

J. M. Murray, B.E., M.S., *Assistant Professor of Agricultural Engineering:* conservation and irrigation

DEPARTMENT OF ANIMAL HUSBANDRY

J. M. Bell, B.Sc.A., M.Sc., Ph.D., *Professor of Animal Husbandry:* animal nutrition
W. E. Howell, B.Sc.A., M.S., Ph.D., *Associate Professor of Animal Husbandry:* animal breeding
C. M. Williams, B.Sc.A., M.Sc., Ph.D., *Associate Professor of Animal Husbandry:* physiology of growth
B. D. Owen, B.Sc., M.Sc., Ph.D., *Assistant Professor of Animal Husbandry:* animal nutrition

DEPARTMENT OF BIOLOGY

J. G. Rempel, B.Sc., M.Sc., Ph.D., F.R.S.C., *Professor of Biology:* entomology
T. J. Arnason, B.Sc., M.A., Ph.D., *Professor of Biology:* plant genetics
M. Shaw, M.S., Ph.D., *Professor of Biology:* plant physiology
T. C. Vanterpool, B.Sc.A., M.Sc., *Professor of Plant Pathology:* cereal and flax diseases

DEPARTMENT OF CHEMISTRY

K. J. McCallum, B.Sc., M.Sc., Ph.D., F.R.S.C., *Professor and Head of the Department of Chemistry:* radioactive tracers and carbon dating
C. C. Lee, B.E., M.Sc., Sc.D., *Associate Professor of Chemistry:* cereal chemistry

DEPARTMENT OF DAIRY SCIENCE

D. L. Gibson, M.B.E., B.Sc.A., M.S., Ph.D., *Professor in the Department of Dairy Science:* dairy manufacturing
E. S. Humbert, B.Sc.A., M.S., Ph.D., *Associate Professor of Dairy Science:* dairy manufacturing
A. N. Myhr, B.Sc.A., M.Sc., Ph.D., *Associate Professor of Dairy Science:* dairy bacteriology

DEPARTMENT OF ECONOMICS

K. A. H. Buckley, B.A., M.A., Ph.D., *Professor of Economics:* marketing

DEPARTMENT OF FARM MANAGEMENT

H. Van Vliet, B.Sc.A., M.Sc., *Professor of Farm Management:* land economics
P. J. Thair, B.Sc.A., M.Sc., Ph.D., *Associate Professor of Farm Management:* crop insurance
R. C. Nicholson, B.Sc.A., M.Sc., *Assistant Professor of Farm Management:* production economics

DEPARTMENT OF FIELD HUSBANDRY

W. J. White, B.Sc.A., M.Sc., Ph.D., *Professor of Field Husbandry:* rye and safflower breeding
D. R. Knott, B.Sc.A., M.S., Ph.D., *Associate Professor of Field Husbandry:* wheat breeding
E. N. Larter, M.Sc., Ph.D., *Associate Professor of Field Husbandry:* barley genetics
J. M. Naylor, B.Sc.A., M.Sc., Ph.D., *Lecturer in Field Husbandry:* plant physiology
F. W. Sosulski, B.Sc.A., M.S., Ph.D., *Assistant Professor of Field Husbandry:* experimental techniques

DEPARTMENT OF HORTICULTURE

S. N. Nelson, B.Sc.A., M.Sc., Ph.D., *Associate Professor of Horticulture:* plant breeding

CANADA

DEPARTMENT OF PHYSICS

B. W. Currie, B.Sc., M.Sc., Ph.D., F.R.S.C., *Professor of Physics and Dean, College of Graduate Studies*: meteorology and climatology

DEPARTMENT OF PLANT ECOLOGY

R. T. Coupland, B.S.A., Ph.D., *Professor of Plant Ecology*: plant ecology
R. L. Dix, B.A., M.S., Ph.D., *Assistant Professor of Plant Ecology*: plant ecology

DEPARTMENT OF POULTRY HUSBANDRY

W. J. Rae, B.S.A., M.Sc., *Professor of Poultry Husbandry*: poultry breeding and management
J. B. O'Neil, B.S.A., M.S.A., *Associate Professor of Poultry Husbandry*: poultry feeding and nutrition

DEPARTMENT OF SOIL SCIENCE

W. L. Hutcheon, B.S.A., M.Sc., Ph.D., *Professor of Soils*: soil physics
D. A. Rennie, B.S.A., Ph.D., *Associate Professor of Soils*: soil chemistry
R. O. St. Arnaud, B.S.A., M.Sc., Ph.D., *Assistant Professor of Soils*: soil structure and mineralogy
E. Paul, B.Sc., Ph.D., *Assistant Professor of Soil Science*: soil microbiology

DEPARTMENT OF VETERINARY HYGIENE

R. Connell, M.S., D.V.M., *Professor of Veterinary Hygiene*: parasitology
J. L. Miller, B.V.S., *Associate Professor of Veterinary Medicine*: diseases of farm animals
Miss A. N. Burton, D.V.M., *Veterinary Pathologist*: virus diseases
J. Spalatin, D.V.M.Sc., *Assistant Professor of Veterinary Science (visiting)*: virus diseases

UNIVERSITY OF ALBERTA

Faculty of Agriculture

DEPARTMENT OF AGRICULTURAL ENGINEERING

F. V. MacHardy, B.E., M.S., *Professor of Agricultural Engineering*: application of machinery techniques to the economics of mechanization; development of control and guidance systems for agricultural machines
B. T. Stephanson, B.Sc., M.Sc., *Associate Professor of Agricultural Engineering*: radioactive tracer techniques in internal combustion engine wear studies

DEPARTMENT OF ANIMAL SCIENCE

Division of Animal Husbandry

L. W. McElroy, B.Sc., M.Sc., Ph.D., *Department Chairman, Professor of Animal Science*: investigations in animal nutrition
J. M. Asplund, B.Sc., M.Sc., Ph.D., *Assistant Professor of Animal Husbandry*: ruminant nutrition
R. T. Berg, B.Sc., M.S., Ph.D., *Associate Professor of Animal Husbandry*: animal breeding and genetics
J. P. Bowland, B.S.A., M.S., Ph.D., *Associate Professor of Animal Husbandry*: animal nutrition
V. E. Mendel, B.Sc., M.Sc., Ph.D., *Assistant Professor of Animal Husbandry*: animal physiology

Division of Poultry Husbandry

D. R. Clandinin, B.S.A., M.S.A., Ph.D., *Professor of Poultry Husbandry*: poultry breeding and nutrition

CANADA

A. R. Robblee, B.Sc., M.Sc., Ph.D., *Professor of Poultry Husbandry*: poultry nutrition

DEPARTMENT OF DAIRY SCIENCE

L. F. L. Clegg, B.Sc.A., Ph.D., D.Sc., D.I.C., M.I.Biol., *Professor of Dairy Science*: investigations in dairy and food science and agricultural bacteriology
F. W. Wood, B.Sc., M.Sc., *Associate Professor of Dairy Science*: processing of dairy and food products
J. M. deMan, Chem.Eng., Ph.D., M.C.I.C., *Assistant Professor*: chemistry and physics of dairy and food products

DEPARTMENT OF ENTOMOLOGY

B. Hocking, B.Sc., M.Sc., Ph.D., *Professor of Entomology*: flight of insects; insect physiology
G. E. Ball, A.B., M.S., Ph.D., *Associate Professor of Entomology*: taxonomy; carabid beetles
W. G. Evans, B.Sc., M.S., Ph.D., *Associate Professor of Entomology*: toxicology; ecology; Scarabaeidae

DEPARTMENT OF GENETICS

Clayton Person, B.A., M.A., Ph.D., *Professor of Genetics*: cytogenetics; host-parasite relations
Rustum Aksel, B.Sc., D.Agr., *Research Associate*: cereal breeding; biometrical genetics
L. P. V. Johnson, B.Sc., M.Sc., Ph.D., *Professor of Genetics and Plant Breeding*: genetics and breeding of barley; biometrical genetics
John Kuspira, B.Sc.A., M.Sc., Ph.D., *Associate Professor of Cytogenetics*: cytogenetics of Triticum
K. A. Lesins, B.Agr., Agr.Lic., D.Sc., *Associate Research Professor in Forage Crops*: breeding; cytogenetics of alfalfa; cytotaxonomy of *Medicago*
W. E. Smith, B.Sc., M.Sc., Ph.D., *Associate Professor of Genetics and Plant Breeding*: genetics and breeding of flax; management of field crops
G. W. R. Walker, B.A., M.Sc., Ph.D., *Associate Professor of Cytology*: cytology and cytogenetics; mutation; plant cell and tissue culture
Jan Weijer, Ph.D., *Professor of Genetics*: microbial and radiation genetics

DEPARTMENT OF SOIL SCIENCE

J. A. Toogood, B.Sc.Agr., Ph.D., *Head and Professor of Soil Science*, and Registrar, Alberta Institute of Agrologists: soil physics, fertility and irrigation
A. W. Moore, B.Sc., M.Sc., Ph.D., *Assistant Professor of Soil Science*: soil microbiology
S. Pawluk, B.Sc.Agr., M.Sc., Ph.D., *Assistant Professor of Soil Science*: soil genesis and classification
J. A. Robertson, B.Sc.A., M.Sc., *Assistant Professor of Soil Science*: soil fertility and chemistry
G. R. Webster, B.Sc.A., M.Sc.A., Ph.D., *Assistant Professor of Soil Science*: soil fertility and chemistry
J. F. Domaar, B.Sc.A., M.Sc.A., Ph.D., *Sessional Instructor*: soil fertility and plant nutrition investigations

UNIVERSITY OF BRITISH COLUMBIA

Faculty of Agriculture Vancouver 8, B.C.

Blythe A. Eagles, B.A. (Br. Col.), M.A., Ph.D. (Tor.), *Dean of the Faculty of Agriculture*: dairy bacteriology and biochemistry

CANADA

DEPARTMENT OF AGRICULTURAL ECONOMICS

W. J. Anderson, B.S.A., M.Sc. (Sask.), M.Sc. (Calif.), *Professor and Chairman*: agricultural economics
J. J. Richter, Dr.rer.Pol. (Graz), *Assistant Professor*: production and marketing

DEPARTMENT OF AGRICULTURAL MECHANICS

T. L. Coulthard, B.E. (Sask.), M.Sc. (Calif.), *Professor and Chairman*: irrigation and drainage
L. M. Staley, B.A.Sc. (Br. Col.), M.Sc. (Calif.), *Assistant Professor*: farm machinery and mechanics
E. L. Watson, B.A.Sc. (Br. Col.), M.Sc. (Calif.), *Assistant Professor*: food technology

DIVISION OF ANIMAL SCIENCE

Blythe A. Eagles, B.A. (Br. Col.), M.A., Ph.D. (Tor.), *Chairman*: dairy bacteriology and biochemistry
J. C. Berry, M.S.A. (Br. Col.), Ph.D. (Iowa), *Professor of Animal Husbandry*: animal breeding and genetics
J. J. R. Campbell, B.S.A. (Br. Col.), Ph.D. (Corn.), *Professor of Dairying*: chemistry of bacteria
W. D. Kits, M.S.A. (Br. Col.), Ph.D. (Iowa), *Associate Professor of Animal Husbandry*: animal physiology
Miss Nora Neilson, M.S.A. (Br. Col.), Ph.D. (Calif.), *Assistant Professor of Dairying*: bacteriological chemistry, mycology
A. J. Wood, M.S.A. (Br. Col.), Ph.D. (Corn.), *Professor of Animal Husbandry*: animal nutrition

DIVISION OF PLANT SCIENCE

V. C. Brink, M.S.A. (Br. Col.), Ph.D. (Wis.), *Professor of Agronomy and Chairman*: genetics, range management
G. H. Harris, B.S.A. (Br. Col.), M.S. (Ore.), Ph.D. (Calif.), *Professor of Horticulture*: plant nutrition
C. A. Hornby, M.S.A. (Br. Col.), Ph.D. (Corn.), *Associate Professor of Horticulture*: vegetable crops, genetics
N. A. MacLean, B.S., Ph.D. (Wash.), *Assistant Professor*: plant pathology
J. W. Neill, B.S.A. (Ont.), Ph.D. (Ore.), *Associate Professor of Horticulture*: floriculture and landscape gardening
D. P. Ormrod, B.S.A. (Br. Col.), Ph.D. (Calif.), *Assistant Professor*: biometrics and field design, crop processing
A. J. Renney, B.S.A. (Br. Col.), M.S. (Calif.), Ph.D. (Ore.), *Associate Professor of Agronomy*: weedicides, fungicides, field crops.

DEPARTMENT OF POULTRY SCIENCE

J. Biely, M.S.A. (Br. Col.), M.S. (Kan.), *Professor and Chairman*: poultry nutrition and management
T. R. B. Barr, B.Sc.Agr., B.Sc.Vet.Sc., M.R.C.V.S. (Edin.), M.V.Sc. (Tor.), Ph.D. (Ill.), *Instructor*: poultry pathology
Miss Beryl E. March, B.A. (Br. Col.), *Instructor and Research Associate*: poultry nutrition

DEPARTMENT OF SOIL SCIENCE

C. A. Rowles, M.Sc. (Sask.), Ph.D. (Minn.), *Professor and Chairman*: chemical and physical properties of soils
J. Basaraba, M.S.A. (Tor.), Ph.D. (Rutgers), *Assistant Professor*: soil bacteriology
E. H. Gardner, B.S.A. (Br. Col.), M.S. (Ore.), Ph.D. (Ore.), *Assistant Professor*: soil chemistry and soil fertility

CANADA

Faculty of Forestry

- R. W. Wellwood, B.A.Sc., M.F., Ph.D., *Professor and Acting Dean*: wood-silviculture relations
L. Adamovich, Dip.For.Eng., *Assistant Professor*: transportation (logging)
J. E. Bier, B.Sc.F., M.A., Ph.D., *Professor*: forest pathology (Dept. of Biology & Botany)
J. Csizmazia, Dip.For.Eng., *Research Assistant*: electronic computing
K. Graham, B.A., M.Sc., Ph.D., *Professor*: forest entomology (Dept. of Zoology)
B. G. Griffith, M.A., M.F., Ph.D., *Associate Professor*: silvics, soil-tree relations
P. G. Haddock, B.S., Ph.D., *Associate Professor*: silviculture, provenance
F. M. Knapp, *Professor, Director, U.B.C. Research Forest*: logging, milling
V. Krajina, D.Sc., *Professor of Botany*: forest ecology (Dept. of Biology & Botany)
D. D. Munro, B.S.F., *Lecturer*: mensuration, photogrammetry
K. Roller, Dip.For.Eng., *Research Associate*: forest botany
J. H. G. Smith, B.S.F., M.F., Ph.D., *Associate Professor*: economics, photogrammetry, mensuration, research methods
J. Soos, Dip.For.Eng., M.F., *Assistant to Research Forester* (University Forest): silviculture
O. Sziklai, Dip.For.Eng., M.F., *Instructor*: forest genetics
J. P. Tessier, B.S.F., M.F., *Resident Forester*: logging
L. Valg, B.S.F., *Lecturer*: forest products, linear programming
J. Walters, B.S.F., M.F., *Research Forester* (University Forest): silviculture

COMMONWEALTH OF AUSTRALIA

A. COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANIZATION

314 Albert Street, East Melbourne, C.2, Vic. Tel.: 41 6611. 'Grams:
Coresearch, Melbourne. Teleprinter: MLB 236

Sir Frederick White, K.B.E., M.Sc., Ph.D., F.A.A., *Chairman*
C. S. Christian, B.Agr.Sc., M.S., *Member of the Executive*
O. H. Frankel, D.Sc., D.Agr., F.A.A., F.R.S., *Member of the Executive*
W. Ives, M.Ed., *Associate Member of Executive*
P. F. Butler, M.Agr.Sc., *Assistant Research Secretary (London)*

1. Agricultural Research Liaison Section

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R. N. Farquhar, B.Agr.Sc., M.S., Ed.D., *Liaison Officer*
E. A. Jackson, B.Agr.Sc., *Liaison Officer*
H. S. Hawkins, B.Agr.Sc. (Hons.), *Liaison Officer*
J. J. Lenaghan, B.Agr.Sc., M.S., *Liaison Officer*
K. Loftus Hills, M.Agr.Sc., *Liaison Officer*
H. A. Nix, B.Agr.Sc., Q.D.A. (Hons.), *Liaison Officer*
G. F. Smith, M.A., *Liaison Officer*
N. L. Tyshing, B.Agr.Sc., *Liaison Officer*

(a) At C.S.I.R.O. LABORATORIES, Black Mountain, via City, Canberra, A.C.T.
(P.O. Box 109, Canberra City, A.C.T.) Tel.: J 0455. 'Grams: Coresearch,
Canberra. Teleprinter: CBA 203.

D. V. Walters, M.Agr.Sc., *Liaison Officer*

(b) At DEPARTMENT OF AGRICULTURE, Farrer Place, Sydney, N.S.W. (Box 36,
G.P.O., Sydney, N.S.W.) Tel.: 27 8105. 'Grams: Coresearch, Sydney.
Teleprinter: SYD 248

R. E. Churchward, B.V.Sc., H.D.A., *Liaison Officer*

2. Animal Research Laboratories

Animal Research Committee

J. M. Rendel, B.Sc., Ph.D., F.A.A., *Chairman*
T. S. Gregory, D.V.Sc., Dip.Bact.
I. W. McDonald, B.V.Sc., B.Sc., Ph.D.
D. F. Stewart, D.V.Sc., Dip.Bact.
A. Packham, B.V.Sc., A.A.S.A., *Secretary*

(a) DIVISION OF ANIMAL GENETICS

(i) *Divisional Headquarters*

Parramatta Road, Glebe, N.S.W. (Private Bag No. 1, P.O., Glebe, N.S.W.)
Tel.: 68 4411. 'Grams: Masterlab, Sydney

J. M. Rendel, B.Sc., Ph.D., F.A.A., *Chief of Division*
A. Packham, B.V.Sc., A.A.S.A., *Research Assistant to Chief*

(ii) *Animal Genetics Laboratory*

Department of Zoology, University of Sydney, Sydney, N.S.W. Tel.: 68 3479
J. M. Rendel, B.Sc., Ph.D., F.A.A., *Chief of Division: selection and canalization*
(Drosophila)

COMMONWEALTH OF AUSTRALIA

P. J. Claringbold, B.V.Sc., Ph.D.: physiology of heterosis; biometry
D. F. Dowling, B.V.Sc., B.Sc., Ph.D.: adaptation of cattle to hot environments
J. F. Eadie, B.Sc.: physiology of heterosis; developmental genetics (poultry)
A. S. Fraser, M.Sc., Ph.D.: developmental physiology of the fleece; selection genetics
G. W. Grigg, M.Sc., Ph.D.: cellular ultrastructure and function; microbial genetics
H. J. Hoffman, M.Sc., Ph.D.: cellular ultrastructure and function; tumour virology
Miss B. M. Kindred, B.Sc.: skin grafting; mouse genetics
T. Nay: development of skin and hair (cattle; mice)
Miss P. R. Pennycuick, M.Sc.: physiological genetics (mice)
B. L. Sheldon, B.Sc.Agr., Ph.D.: selection genetics; mutation (*Drosophila*)
W. R. Sobey, B.Sc., Ph.D.: genetic resistance to myxoma virus in the rabbit

(iii) *Animal Breeding Section*

Parramatta Road, Glebe, N.S.W. (Private Bag No. 1, P.O., Glebe, N.S.W.)
Tel.: 68 4411. 'Grams: Masterlab, Sydney
Miss H. Newton Turner, B.Arch.: sheep breeding and selection
A. A. Dunlop, M.Agr.Sc., Ph.D.: sheep breeding; gene \times environment interactions
G. M. Tallis, M.Sc., Ph.D.: sheep breeding; mathematical statistics
S. S. Y. Young, B.Agr.Sc., Ph.D.: sheep selection genetics

(iv) *National Field Station*

"Giruth Plains", Cunnamulla, Queensland. Tel.: Cunnamulla 167
C. H. S. Dolling, M.Agr.Sc., *Officer-in-Charge*: sheep breeding; polledness; efficiency of production

(v) *McMaster Field Station*

Badgery's Creek, N.S.W. (C.S.I.R.O. Mail Bag, Liverpool, N.S.W.)
Tel.: Badgery's Creek 7
R. H. Hayman, M.Agr.Sc., *Officer-in-Charge*: dairy cattle breeding; inbreeding of sheep
T. E. Allen, B.Sc.: hot climate physiology—dairy cattle
Y. S. Pan, M.Sc.Agr.: hot climate physiology; histology of dairy cattle skin

(vi) *National Cattle Breeding Station*

"Belmont", P.O. Box 542, Rockhampton, Queensland. Tel.: Parkhurst 37.
'Grams: Alresearch, Rockhampton
J. F. Kennedy, M.Agr.Sc., *Officer-in-Charge*: cattle breeding

(vii) *Cattle Research Laboratory*

Quay Lane, Rockhampton, Queensland. (P.O. Box 542, Rockhampton, Queensland.) Tel.: Rockhampton 5509
H. G. Turner, B.Agr.Sc., M.A., *Officer-in-Charge*: physiology of adaptation of cattle to hot environments
G. C. Ashton, B.Sc., Ph.D.: nutrition and metabolism; β -globulin polymorphism
T. B. Post, B.S., Ph.D.: endocrinology—thyroid function
A. V. Schleger, B.Sc.: coat type, hair growth and colour in cattle

(viii) *Poultry Research Centre*

Tarneit Road, Werribee, Vic. Tel.: Werribee 190
J. A. Morris, B.Sc.Agr., Ph.D., *Officer-in-Charge*: poultry breeding
F. E. Binet, M.D.: statistical genetics
Miss L. W. Bobr, M.Sc.Agr.: avian physiology—sperm transport

COMMONWEALTH OF AUSTRALIA

(h) DIVISION OF ANIMAL HEALTH

(i) Divisional Headquarters

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A. J. Vasey, B.Agr.Sc., *Divisional Secretary*

(ii) Animal Health Research Laboratory

Flemington Road, Parkville, Vic. (Private Bag No. 1, P.O., Parkville, N.2, Vic.) Tel.: 34 2661. 'Grams: Alresearch, Melbourne

T. S. Gregory, D.V.Sc., Dip.Bact., *Chief of Division*: bacteriology
J. B. Bingley, D.A.C.: copper metabolism in sheep, analytical chemistry
L. B. Bull, C.B.E., D.V.Sc.: pathology
S. H. Butterly, B.Sc.: microbiological chemistry
B. L. Clark, B.V.Sc.: infertility of dairy cattle
G. S. Cottew, B.Sc.: bovine pleuropneumonia
A. T. Dann, M.Sc.: biochemistry, alkaloid intoxication
A. T. Dick, D.Sc.: copper metabolism in sheep, chemical pathology
E. L. French, M.Sc., Ph.D.: virology and immunology
Miss V. E. Hodgetts, B.Sc.: pharmacology, heliotrope poisoning
J. R. Hudson, B.Sc., M.R.C.V.S.: bovine pleuropneumonia, microbiology
L. C. Lloyd, B.V.Sc., Ph.D.: bovine pleuropneumonia, pathology
Miss M. Monsbrough, B.Sc.: infertility of dairy cattle
I. D. B. Newsam, Ph.D., M.R.C.V.S.: infertility of dairy cattle
J. E. Peterson, B.V.Sc.: pathology and microbiology
P. Plackett, B.A., Ph.D.: microbiological chemistry
A. W. Rodwell, M.Sc., Ph.D.: microbiological chemistry
T. D. St. George, B.V.Sc.: bovine pleuropneumonia
W. A. Snowdon, B.V.Sc.: virology and immunology

(iii) McMaster Animal Health Laboratory

Parramatta Road, Glebe, N.S.W. (Private Bag No. 1, P.O., Glebe, N.S.W.)
Tel.: 68 4411. 'Grams: Masterlab, Sydney

D. F. Stewart, D.V.Sc., Dip.Bact., *Associate Chief of Division and Officer-in-Charge*: immunity of sheep to internal parasites
J. C. Boray, D.V.M.: fluke disease
J. K. Dineen, B.Sc., Ph.D.: immunology
A. D. Donald, B.V.Sc.: helminthology (larval ecology)
K. J. Farrington, M.Sc., A.S.T.C.: organic chemistry
C. H. Gallagher, B.V.Sc., Ph.D.: chemical pathology
H. McL. Gordon, B.V.Sc.: helminthology (epidemiology and treatment)
N. P. H. Graham, B.V.Sc.: foot diseases of sheep and mycotic dermatitis
Miss J. H. Koch, M.D.: chemical pathology
Miss D. G. Mann, B.Sc.: chemical pathology
M. D. Murray, B.Sc., F.R.C.V.S.: sheep ectoparasites (ecology and treatment)
I. G. Pearson, B.V.Sc.: fluke disease
D. S. Roberts, M.V.Sc.: mycotic dermatitis
R. I. Sommerville, M.Agr.Sc.: helminthology (ecology)
L. E. A. Symons, M.Sc., B.V.Sc.: pathology of helminth infection
J. H. Thomas, B.V.Sc.: foot diseases of sheep
B. M. Wagland, B.Sc.: immunology

(iv) Veterinary Parasitology Laboratory

677 Fairfield Road, Yeerongpilly, S.4, Queensland. Tel.: Brisbane 48 2581.

'Grams: Alresearch, Brisbane
F. H. S. Roberts, D.Sc., *Officer-in-Charge*: helminths of cattle, taxonomy of ticks

COMMONWEALTH OF AUSTRALIA

K. C. Bremner, M.Sc.: helminths of cattle (biochemical investigations)
K. E. Dixon, B.Sc.: helminths of cattle (liver fluke)
P. H. Durie, M.Sc.: helminths of cattle (ecology)
P. Elek, I.I.D., B.V.Sc.: helminths of cattle (immunology)
R. K. Keith, A.R.A.C.I.: helminths of cattle (treatment, ecology)
D. F. Mahoney, B.V.Sc.: cattle tick fevers
R. F. Rick, M.Sc., D.V.Sc.: cattle tick fevers, helminths of cattle (treatment)

(c) DIVISION OF ANIMAL PHYSIOLOGY

(i) *Divisional Headquarters*

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J. H. Elliott, B.Sc., *Divisional Secretary*

(ii) *Ian Clunies Ross Animal Research Laboratory*

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I. W. McDonald, B.V.Sc., B.Sc., Ph.D., *Chief of Division*: digestion and nitrogen metabolism of ruminants
G. Alexander, M.Agr.Sc.: physiology of reproduction and neonatal lambs
J. M. Bassett, B.Sc., Ph.D.: endocrine control of metabolism
A. W. H. Braden, M.Sc., Ph.D.: physiology of reproduction
P. K. Briggs, B.Sc.Agr., Ph.D.: physiology of undernutrition of sheep
A. H. Brook, B.V.Sc.: renal physiology, posthitis
R. E. Chapman, B.Sc.App.: fleece metrology and abnormalities of wool growth
A. M. Downes, M.Sc.: isotope chemistry, metabolism of sheep
K. A. Ferguson, B.V.Sc., Ph.D.: endocrinology of wool growth
N. McC. Graham, B.Sc., B.Agr., Ph.D.: energy metabolism of sheep
J. P. Hogan, B.Sc.Agr., Ph.D.: digestion in sheep
J. C. D. Hutchinson, M.A.: climatic physiology
H. R. Lindner, B.V.Sc., Ph.D.: physiology of steroid hormones
A. G. Lyne, B.Sc., Ph.D.: experimental histology, tissue culture of skin
G. R. Moule, D.V.Sc.: sleep ecology
B. A. Panarettto, B.V.Sc., Ph.D.: body composition of ruminants
H. M. Radford, B.Sc.: physiology of reproduction
R. L. Reid, B.Sc.Agr., Ph.D.: carbohydrate and fat metabolism, pregnancy toxæmia
P. J. Reis, B.Sc.Agr.: nitrogen metabolism and wool growth
P. G. Schinckel, B.V.Sc.: wool biology, wool follicle development
B. F. Short, M.Sc.Agr., Ph.D.: wool biology, wool follicle development
B. D. Stacy, B.Sc., Ph.D.: renal physiology, urinary calculi
R. B. Symington, B.Sc., Ph.D., D.T.A.: study of ovine gonadotrophins
G. M. H. Waites, B.Sc., M.A., Ph.D.: physiology of reproduction
A. L. C. Wallace, B.Sc.: endocrinology of wool growth
A. C. I. Warner, B.Sc., Dip.Microbiol., Ph.D.: rumen microbiology
R. H. Weston, B.Sc.Agr.: ruminant nutrition
O. B. Williams, M.Agr.Sc.: ecology (animal/plant relationships)

(iii) *Pastoral Research Laboratory*

University of New England, Armidale, N.S.W. (C.S.I.R.O., Armidale, N.S.W.) Tel.: 2454 (Armidale). 'Grams: Coresearch, Armidale

W. M. Willoughby, B.Sc.Agr., *Officer-in-Charge*: pasture ecology—utilization
E. J. Hilder, B.Sc.Agr.: agronomy, species evaluation

COMMONWEALTH OF AUSTRALIA

L. J. Lambourne, M.Sc.: animal husbandry, nutritional biochemistry
D. R. Lamond, B.V.Sc., M.Agr.Sc., Ph.D.: physiology of reproduction
T. F. Reardon, M.Sc.Agr.: animal husbandry, nutritional biochemistry
W. H. Southcott, B.V.Sc.: helminth ecology, animal production
J. L. Wheeler, B.Sc.Agr., Ph.D.: pasture management and utilization

(iv) *At Cunningham Laboratory*
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M. C. Franklin, M.Sc., Ph.D.: animal nutrition

(v) *At Institute of Agriculture, University of Western Australia*
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E. Munch-Petersen, M.Sc., B.A.: rumen microbiology

3. Division of Biochemistry and General Nutrition

The University, Adelaide, S. Aust. Tel.: 8 2778. 'Grams: Nutrition, Adelaide

H. R. Marston, D.Sc., F.A.A., F.R.S., *Chief of Division*: ruminant physiology, energetics, minor element deficiencies

Miss S. H. Allen, B.Sc., A.R.A.C.I.: biochemistry, proteins

Miss M. C. Dawbarn, D.Sc.: accessory food factors

W. W. Forrest, B.Sc., Ph.D.: physical chemistry

L. J. Frahn, M.Sc., Ph.D., A.R.A.C.I.: organic chemistry

K. O. Godwin, B.Sc., Ph.D.: animal nutrition

F. V. Gray, M.Sc.: microbiology

E. G. Holmes, M.A., M.D., M.R.C.P.: animal physiology, nutrition

I. G. Jarrett, M.Sc., A.R.A.C.I.: animal physiology

G. B. Jones, M.Sc., A.R.I.C., A.R.A.C.I.: chemical analyses

R. E. Kuchel, B.Sc., R.D.A.: field experiments

H. J. Lee, M.Sc.: field experiments

J. A. Mills, M.Sc., Ph.D.: organic chemistry

A. W. Peirce, D.Sc., F.R.A.C.I.: fluorine toxicosis

A. F. Pilgrim, B.Sc.: microbiology

B. J. Potter, M.Sc., A.R.A.C.I.: animal physiology

D. S. Riceman, D.Sc., B.Agr.Sc., R.D.A.: plant nutrition

R. M. Smith, M.Sc.: nutritional biochemistry

D. J. Walker, B.Sc., Ph.D.: microbiology

R. A. Weller, B.Sc., A.R.A.C.I.: microbiology

4. Dairy Research Section

Graham Road, Highett, S.21, Vic. Tel.: 95 1231. 'Grams: Coorsch, Melbourne

G. Loftus Hills, B.Agr.Sc., *Officer-in-Charge*

L. L. Muller, B.Sc., *Technical Secretary*: casein manufacture

J. Conochie, B.Sc.Agr.: packaging of dairy products

J. Czulak, B.Sc.Agr.: cheese, mechanization of manufacture

D. A. Forss, M.Sc.: flavour chemistry

P. M. T. Hansen, M.Sc., Ph.D.: new products

R. D. Hill, B.Sc., B.Com.: milk proteins

Miss B. M. P. Keogh, M.Sc.: bacteriology of cheese

N. King, M.Sc.: micro-structure

E. G. Pont, M.Sc.Agr.: market milk and cream, oxidation defects

N. S. Snow, M.Sc.Agr., Ph.D.: milk proteins

5. Engineering Section

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R. N. Morse, B.Sc., B.E., *Officer-in-Charge*

COMMONWEALTH OF AUSTRALIA

R. V. Dunkle, B.S., M.S.: solar energy, heat and mass transfer
J. J. Kowalczewski, Dip.Ing.: refrigeration, heat transfer, two-phase flow
D. W. Cunliffe, F.M.T.C.: environment control
H. J. Griffiths, B.E.E., B.Sc.: heat and mass transfer—wheat storages
F. G. Hogg, B.E.: environment control
R. C. R. Johnston, B.Mech.E., M.Eng.Sc.: forces acting on tillage implements
M. Kovarik, Ing.: automatic computers and controllers—wheat studies
W. Read, Dip.Mech.Eng.: environment control, machine development
P. Taylor, B.Sc.: forces acting on tillage implements

6. Division of Entomology

Black Mountain, via City, Canberra, A.C.T. (P.O. Box 109, Canberra City, A.C.T.) Tel.: J 0455. 'Grams: Coresearch, Canberra. Teleprinter: CBA 203

D. F. Waterhouse, D.Sc., F.A.A., *Chief of Division*: insect physiology, digestion
F. N. Ratcliffe, O.B.E., B.A., *Assistant Chief*: ecology, biological control
S. W. Bailey, B.Sc., A.R.C.S.: pests of stored products
L. B. Barton Browne, B.Sc., Ph.D.: sensory physiology
G. F. Bornemissa, Ph.D.: biological control—ragwort, dung insects
T. G. Campbell: museum and biological control
P. B. Carne, B.Agr.Sc., Ph.D.: ecology of pasture and forest insects
D. P. Clark, B.Sc., Ph.D.: ecology of grasshoppers
L. R. Clark, M.Sc.: field population studies
D. H. Colless, B.Sc.Agr., Ph.D.: taxonomy of Diptera
I. F. B. Common, M.A., M.Agr.Sc.: taxonomy of Lepidoptera
M. F. C. Day, B.Sc., Ph.D., F.A.A.: insects and viruses
F. J. Gay, B.Sc., D.I.C.: termites and forest insects
P. W. Geier, B.Sc.Agr., Ph.D.: ecology of orchard pests
A. R. Gilby, M.Sc., Ph.D.: insect physiology, surface chemistry
D. Gilmour, M.Sc.: insect muscle enzymes
T. D. C. Grace, B.Sc.: insects and viruses, tissue culture
T. Greaves: ants and termites
R. H. Hackman, M.Sc., Ph.D.: insect physiology, cuticle chemistry
R. D. Hughes, B.Sc., Ph.D., A.R.C.S., D.I.C.: biological control—aphids
R. W. Kerr, B.Sc.: insecticides
K. H. L. Key, D.Sc., Ph.D., D.I.C., F.A.A., *Curator of Insect Collection*: taxonomy of Acridoidea
I. M. Mackerras, B.Sc., M.B., Ch.M., F.R.A.C.P., F.A.A., *Editor of "Insects of Australia"*: taxonomy of Diptera
B. P. Moore, B.Sc., Ph.D., D.Ph.: chemistry of insect hormones
A. J. Nicholson, C.B.E., D.Sc., F.A.A.: population dynamics
K. R. Norris, M.Sc.: ecology of sheep blowfly
S. J. Paramonov, D.Sc.: taxonomy of Diptera
R. F. Powning, M.Sc., A.S.T.C.: insect physiology, wool digestion
E. F. Riek, M.Sc.: taxonomy of Hymenoptera
F. Wilson: biological control of insect pests and weeds

(a) AT BIOLOGICAL CONTROL STATION, SYDNEY
Botanic Gardens, Mrs. Macquarie's Road, Sydney, N.S.W. Tel.: 27 2972
G. J. Snowball, B.Sc.: biological control of fruit fly

(b) AT FIELD STATION, ALBURY, N.S.W.
P.O. Box 143, Albury, N.S.W. Tel.: 1744
K. L. Taylor, B.Sc.Agr.: ecology of the Phasmatidae; taxonomy of Psyllidae
J. E. Readshaw, B.Sc., Ph.D.: ecology of the Phasmatidae

COMMONWEALTH OF AUSTRALIA

(c) AT VETERINARY PARASITOLOGY LABORATORY, BRISBANE
677 Fairfield Road, Yeerongpilly, Brisbane, Queensland.
Tel.: Brisbane 48 2581

W. J. Roulston, M.Sc.: cattle tick insecticides
P. R. Wilkinson, M.A.: cattle tick ecology

(d) AT WESTERN AUSTRALIAN REGIONAL LABORATORY, NEDLANDS
University Grounds, Nedlands, W. Aust. Tel.: Perth 86 2451
M. M. H. Wallace, B.Sc.: earth mite and lucerne flea investigations

(e) AT ZOOLOGY DEPARTMENT, UNIVERSITY OF SYDNEY
Sydney, N.S.W. Tel.: 68 3479
M. A. Bateman, B.Sc., Ph.D.: ecology of Queensland fruit fly

7. Fodder Conservation Section

Graham Road, Highett, S.21, Vic. Tel.: 95 1231

W. L. Greenhill, M.E., *Officer-in-Charge*: physics of fodder conservation
C. J. Brady, M.Sc.Agr.: biochemical changes during conservation
R. B. Jackson, M.Sc.: biochemistry of silage
G. W. Lanigan, M.Sc.: silage microbiology
Mrs. J. F. McEvilin, M.Sc.: chemistry of fodder conservation
W. Shepherd, B.Sc., M.Agr.Sc.: haymaking, physiological changes

8. Division of Food Preservation

(a) DIVISIONAL HEADQUARTERS

Delhi Road, North Ryde, N.S.W. (P.O. Box 43, Ryde, N.S.W.)
Tel.: Sydney 88 0233. 'Grams: Foodpres, Sydney

J. R. Vickery, M.Sc., Ph.D., *Chief of Division*: storage of eggs
W. J. Scott, B.Sc.Agr., D.Sc., *Assistant Chief of Division*: microbiology of foods
R. B. Withers, M.Sc., Dip.Ed., *Technical Secretary*
E. F. L. J. Anet, M.Sc., Ph.D.: carbohydrate chemistry
B. J. Bloomfield, M.Sc.: freezing and drying of micro-organisms
P. W. Board, B.Sc.Hons.: corrosion of tinplate
D. J. Casimir, M.Sc., Dip.Ed.: canning and food equipment
B. V. Chandler, B.Sc.Hons., Ph.D.: chemistry of fruits and vegetables
J. H. B. Christian, B.Sc.Agr.Hons., Ph.D.: water requirements and salt tolerance
of micro-organisms
J. B. Davenport, M.Sc.: lipid chemistry
E. G. Davis, B.Sc.Hons.: containers for foods
R. A. de Fossard, B.Sc.Hons.: physiology of fruits in storage, ripening
H. L. Evans, M.Sc., Ph.D.: heat and mass transfer
E. G. Hall, B.Sc.Agr.Hons.: storage and transport of fruits and vegetables
F. E. Huclain, B.Sc.Hons., Ph.D.: chemical changes in fruits during storage;
ripening
D. L. Ingles, M.Sc., Ph.D.: carbohydrate chemistry
A. R. Johnson, B.Sc.Hons., Ph.D.: chemistry of animal products during storage
J. F. Kefford, M.Sc.: quality control; fruit juice concentration
L. J. Lynch, B.Sc.Agr.Hons.: canning, canning crops
D. McG. McBean, B.Sc.: dehydration of fruits and vegetables
R. S. Mitchell, M.Sc.Agr.: canning crops, texture investigations
K. E. Murray, B.Sc.Hons.: chemistry of food volatiles and lipids
W. G. Murrell, B.Sc.Agr., D.Phil.: bacterial spores
R. P. Newbold, M.Sc., Ph.D.: biochemistry of muscle

COMMONWEALTH OF AUSTRALIA

A. R. Prater, B.Sc.Agr.: preservation of animal products
Miss T. M. Reynolds, M.Sc., D.Phil.: carbohydrate chemistry
J. Shipton, B.Sc.Agr.: freezing of fruits and vegetables
G. C. Walker, B.Sc., Ph.D.: freezing of fruits and vegetables; enzymes in frozen foods

- (b) AT BOTANY DEPARTMENT, UNIVERSITY OF SYDNEY, Sydney, N.S.W.
Tel.: 68 2223
- D. D. Davies, B.Sc., Ph.D., *Officer-in-Charge*: plant metabolism and enzymology
Miss J. M. Bain, M.Sc.: electron microscopy
G. P. Findlay, B.Sc.Hons.: biophysical problems of plant cells
J. Giovanelli, B.Sc.Agr., Ph.D.: plant metabolism and enzymology
D. Graham, B.Sc.Hons., Ph.D.: plant metabolism
A. B. Hope, B.Sc., Ph.D.: biophysical problems of plant cells
T. ap Rees, M.A., D.Phil.: plant metabolism
Mrs. D. H. Turner, M.Sc., Ph.D.: carbohydrate and nucleotide metabolism in plants; photosynthesis
J. F. Turner, M.Sc., Ph.D.: carbohydrate and nucleotide metabolism in plants; photosynthesis
- (c) AT BIOCHEMISTRY DEPARTMENT, UNIVERSITY OF SYDNEY
Sydney, N.S.W. Tel.: 68 0522
- R. B. Burley, M.Sc., Ph.D.: physical chemistry of proteins
M. B. Smith, A.S.A.S.M., M.Sc.: physical chemistry of proteins
- (d) AT ATOMIC ENERGY RESEARCH ESTABLISHMENT, Lucas Heights, N.S.W.
Tel.: 531 0111
- J. J. Macfarlane, M.Sc.: irradiation of foods
- (e) AT BRISBANE ABATTOIR
P.O. Box 12, Cannon Hill, E.4, Queensland. Tel.: X4 4006. 'Grams:
Foodpres, Brisbane
- A. Howard, M.Sc.: *Officer-in-Charge*: cold storage of meat
F. Grau, B.Sc.Hons., M.S., Ph.D.: physiology of meat spoilage micro-organisms
G. Kaess, Dr.Ing.: preservation of meat
- (f) AT TASMANIAN REGIONAL LABORATORY
"Stowell", Stowell Avenue, Hobart, Tas. Tel.: 2 2786, 2 2787
'Grams: Coresearch, Hobart
- S. M. Sykes, B.Sc.Agr.: preservation of fruits and vegetables

9. Division of Forest Products

69 Yarra Bank Road, South Melbourne, S.C.4, Vic. Tel.: Melbourne 69 5831.
'Grams: Forestproducts, Melbourne

H. E. Dadswell, D.Sc., *Chief of Division*: wood and fibre structure, wood chemistry
C. S. Elliot, B.Sc., *Assistant Chief of Division*: timber seasoning, preservation and general utilization

- (a) PLYWOOD INVESTIGATIONS
J. W. Gottstein, B.Sc., *Officer-in-Charge*: plywood research
K. F. Plomley, B.Sc.Agr.: adhesives

- (b) SPECIAL INVESTIGATIONS
W. E. Cohen, D.Sc.: pulp and paper

COMMONWEALTH OF AUSTRALIA

(c) TIMBER MECHANICS

- J. D. Boyd, M.C.E., *Officer-in-Charge*: timber engineering research
N. H. Kloot, M.Sc.: silvicultural-strength relationships
R. G. Pearson, B.A., B.C.E.: timber engineering research

(d) TIMBER PHYSICS

- R. S. T. Kingston, B.Sc., B.E., *Officer-in-Charge*: rheology of wood
G. N. Christensen, M.Sc., Ph.D.: wood-liquid relations
L. N. Clarke, M.Mech.E., B.Eng.Sc.: instrumentation, thermal and electrical properties
P. U. A. Grossman, Ph.A.Mr., M.Sc., Ph.D.: rheology of wood
Miss K. E. Kelsey, M.Sc., Ph.D.: wood-liquid relations

(e) TIMBER PRESERVATION

- N. Tamblyn, M.Sc.Agr., *Officer-in-Charge*: wood preservation, mycology
E. W. B. Da Costa, M.Agr.Sc.: mycology
R. Johanson, M.Sc.: chemistry of wood preservatives
P. Rudman, B.Sc., Ph.D., Dip.Microbiol.: biochemistry

(f) TIMBER SEASONING

- G. W. Wright, M.E., *Officer-in-Charge*: seasoning practice, kiln design, timber handling
W. G. Kauman, B.Sc., Dr.en.Sc., A.R.M.T.C.: collapse, drying studies

(g) TIMBER UTILIZATION

- R. F. Turnbull, B.E., *Officer-in-Charge*: sawmilling techniques, timber standards, utilization
W. M. McKenzie, M.Sc., Ph.D.: residuc utilization, sawing

(h) WOOD CHEMISTRY

- H. G. Higgins, B.Sc.Hons., *Officer-in-Charge*: paper physics
R. C. McK. Stewart, B.Sc.: wood polysaccharides
A. J. Watson, A.R.M.T.C.: pulp and paper

(i) WOOD AND FIBRE STRUCTURE

- A. B. Wardrop, D.Sc., Ph.D., *Officer-in-Charge*: fibre morphology and cell wall structure
D. E. Bland, M.Sc.: lignin
J. Cronshaw, B.Sc., Ph.D.: cell wall structure
W. E. Hillis, M.Sc., A.G.Inst.Tech.: cell contents, wood and bark
H. D. Ingle, B.For.Sc.: anatomy of wood
G. Seurfield, B.Sc., Ph.D.: influences of environment on growth

10. Irrigation Research Stations

(a) MURRAY IRRIGATION AREAS

- Commonwealth Research Station, Merbein, Vic. Tel.: South Merbein 252 and 253. Grams: Coresearch, Merbein
- J. V. Possingham, B.Agr.Sc.Hons., M.Sc., D.Phil., *Officer-in-Charge*: physiological and morphological effects of nutrients on plants
D. McE. Alexander, B.Sc.: vine nutrition studies
A. J. Antcliff, B.Sc.Hons.: vine physiology and selection
C. A. Argyriadis, M.S.: groundwater flow studies with electrical analogue
J. G. Baldwin, B.Agr.Sc., B.Sc.: climatic effects on vines, irrigation requirements
S. F. Bridley, B.Agr.Sc.: groundwater studies
H. C. Haskew, B.Agr.Sc., M.S.: field problems associated with microscopics of fluid flow
P. May, Ing.Agr.: vine physiology, fruit initiation

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M. R. Sauer, B.Agr.Sc.: phytonematode studies
N. Street, Ph.D.: microscopics of fluid flow
R. C. Woodham, B.Agr.Sc.: vine nutrition studies

(b) MURRUMBIDGEE IRRIGATION AREAS

Irrigation Research Station, Private Mail Bag, Griffith, N.S.W.
Tel.: Griffith 1701. 'Grams: Coresearch, Griffith

E. R. Hoare, B.Sc.Eng., *Officer-in-Charge*
F. Cope, M.Agr.Sc., Ph.D.: agronomic aspects of reclamation
H. W. Doelle, Dr.rer.nat.: analytical chemistry and viticultural research
P. M. Fleming, B.E.: spray irrigation and meteorology
H. Greenway, Ir.Agr.: salinity and plant growth
A. R. G. Lang, Dip.Appl.Chem., B.Sc., Ph.D.: plant water and nutrient uptake
F. H. Lenz, Dr.Agr.: citrus development and nutrition
E. T. Linacre, M.A., M.Sc.: energy relations of irrigated crops
W. A. Muirhead, B.Sc.Agr.: agronomic aspects of reclamation
J. H. Palmer, B.Sc., Ph.D.: plant-water relations
J. E. Saunt, M.Sc.: plant introduction
T. Talsma, Ir.Agr.: soils and drainage
E. N. S. Trickett, B.Sc.Eng.: evapotranspiration and instrumentation

11. Division of Land Research and Regional Survey

P.O. Box 109, Canberra City, A.C.T. Tel.: Canberra J 0455. 'Grams:
Coresearch, Canberra

(a) CANBERRA, DIVISIONAL HEADQUARTERS

G. A. Stewart, M.Agr.Sc., *Chief of Division*: regional resources surveys, pedology
A. F. Gurnett-Smith, B.Agr.Sc., *Assistant to Chief of Division*
Miss M. Mills, B.Sc., *Technical Secretary (Research Services)*
K. D. Woodyer, B.Sc.Agr., *Technical Secretary (Field Stations)*
W. Arndt, M.Agr.Sc.: soil management
H. D. Barrs, B.Sc., Ph.D.: plant physiology, micro-climatology
J. J. Basinski, B.Sc., M.A.: agricultural assessment
M. J. J. Bik, D.Sc.: geomorphology, land resources surveys
T. G. Chapman, B.Sc., Ph.D.: regional hydrology
B. R. Davidson, M.Agr.Sc., Ph.D.: regional agricultural assessment
E. A. Fitzpatrick, M.A.: regional climatology
R. W. Galloway, M.A., Ph.D.: geomorphology, land resources surveys
R. H. M. van de Graaff, Ing.Agr.: pedology, Papua and New Guinea land
resources surveys
H. A. Haantjens, Ing.Agr.: pedology, Papua and New Guinea land resources
surveys
P. C. Heyligers, Ph.D.: plant ecology, land resources surveys
R. D. Hoogland, D.Sc.: systematic botany, Papua and New Guinea
M. Lazarides, Q.D.A.: systematic botany
J. A. Mabbutt, M.A.: geomorphology, land resources surveys
C. M. Mitchell, M.A.: pedology, land resources surveys
M. J. T. Norman, B.Sc., Ph.D.: agronomy of pastures and fodder crops
R. A. Perry, M.Sc.: arid zone ecology, land resources surveys
E. Phillis, Ph.D., D.Sc.: crop physiology
G. K. Rutherford, M.Sc., Ph.D.: pedology, land resources surveys
J. C. Saunders, B.Sc.Agr.: forest botany, Papua and New Guinea
R. Schodde, B.Sc.: systematic botany, Papua and New Guinea
R. O. Slatyer, D.Sc.Agr.: soil-water-plant relations, climatology
N. H. Speck, M.Sc., Ph.D.: plant ecology, land resources surveys
J. G. Speight, M.Sc.: geomorphology, land resources surveys

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W. R. Stern, M.Sc.Agr., Ph.D.: plant physiology, micro-climatology
R. Story, D.Sc.: plant ecology, land resources surveys
R. Wetselaar, Ing.Agr.: plant and soil nitrogen
R. L. Wright, M.Sc.: geomorphology, land resources surveys

- (b) KATHERINE RESEARCH STATION, Katherine, N.T.
L. J. Phillips, Q.D.D., *Officer-in-Charge*: agronomy of peanuts, cotton and fodder crops
- (c) KIMBERLEY RESEARCH STATION, Kununurra, W. Aust.
A. L. Chapman, B.Agr.Sc.: irrigation agronomy
N. J. P. Thomson, B.Agr.Sc.: agronomy and breeding of cotton
P. J. van Rijn, Ing.Agr.: weed control
- (d) COASTAL PLAINS RESEARCH STATION, P.O. Box 738, Darwin, N.T. Tel.: 2654.
'Grams: Coresearch, Darwin
K. Wilson-Jones, M.Sc., *Director*: agronomy of rice
E. C. B. Langfield: rice breeding
R. W. Strickland, M.Sc.Agr.: agronomy of rice
- (e) ARID ZONE RESEARCH CENTRE, P.O. Box 77, Alice Springs, N.T. Tel.: 288.
'Grams: Coresearch, Alice Springs
R. E. Winkworth, B.Sc., *Acting Officer-in-Charge*: arid zone ecology, plant introduction

12. Division of Mathematical Statistics

- (a) DIVISIONAL HEADQUARTERS
University of Adelaide, Adelaide, S. Aust. Tel.: 8 2778. 'Grams: Nutrition, Adelaide
E. A. Cornish, B.Agr.Sc., D.Sc., F.A.A., F.A.I.A.S., *Chief of Division*
A. G. Constantine, B.Sc.
N. S. Stenhouse, M.Sc.
G. N. Wilkinson, M.Sc.
- (b) At CUNNINGHAM LABORATORY, BRISBANE
St. Lucia, Brisbane, Queensland. Tel.: Brisbane 7 3121. 'Grams: Coresearch, Brisbane
K. P. Haydock, B.Sc.
- (c) At DIVISIONS OF PLANT INDUSTRY AND ENTOMOLOGY
Black Mountain, Canberra, A.C.T. (P.O. Box 109, Canberra City, A.C.T.)
Tel.: J 0455. 'Grams: Coresearch, Canberra
M. L. Dudzinski, B.Sc., B.Ec.
G. A. McIntyre, B.Sc., Dip.Ed.
E. J. Williams, B.Com., D.Sc.
- (d) At DIVISION OF ANIMAL PHYSIOLOGY
Great Western Highway, Prospect, N.S.W. Tel.: YA 0321. 'Grams: Rosslab, Sydney
H. Weiler, Lic.és.Sc.(Par.), M.Sc.
- (e) At DIVISION OF FOOD PRESERVATION
P.O. Box 43, Ryde, N.S.W. Tel.: Sydney 88 0233. 'Grams: Foodpres, Sydney
G. G. Coote, B.A., B.Sc.
- (f) At NATIONAL STANDARDS LABORATORY
University Grounds, City Road, Chippendale, N.S.W. Tel.: Sydney 68 0566.
'Grams: Coresearch, Sydney
R. T. Leslie, B.Sc., M.A., Ph.D.

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- (g) At PASTORAL RESEARCH LABORATORY, ARMIDALE
University of New England, Armidale, N.S.W. Tel.: Arm. 2454. 'Grams:
Coresearch, Armidale
P. F. May, B.Sc.Agr.
- (h) At DIVISION OF BUILDING RESEARCH
Graham Road, Highett, S.21, Vic. Tel.: Melbourne 95 1231
R. Birtwistle, B.Sc.
- (i) At UNIVERSITY OF MELBOURNE
Parkville, N.2, Vic.
At School of Agriculture
A. M. W. Verhagen, Cand.Nat.Phil. (Utrecht), B.A.
At Computation Laboratory
G. W. Hill, M.Sc.
T. Pearcey, B.Sc.
- (j) At DIVISION OF PROTEIN CHEMISTRY
343 Royal Parade, Parkville, N.2, Vic. Tel.: Melbourne 34 5840
W. B. Hall, B.A.
- (k) At WESTERN AUSTRALIAN REGIONAL LABORATORY
University Grounds, Nedlands, W. Aust. Tel.: Perth 86 2451. 'Grams:
Coresearch, Perth
D. W. Goodall, Ph.D., D.Sc.

13. Division of Plant Industry

DIVISIONAL HEADQUARTERS: Black Mountain via City, Canberra, A.C.T. (P.O.
Box 109, Canberra City, A.C.T.) Tel.: J 0455. 'Grams: Coresearch,
Canberra. Teleprinter: CBA 203

Vacant: *Chief of Division*

R. M. Moore, M.Sc.Agr., *Assistant Chief of Division*

J. E. Falk, M.Sc., Ph.D., F.A.A., *Assistant Chief of Division*

A. Shavitsky, B.Agr.Sc., *Assistant to Chief*

- (a) At DIVISIONAL HEADQUARTERS
Canberra, A.C.T.

(i) *Genetics and Plant Breeding*

J. B. Langridge, M.Sc., Ph.D., *Section Chairman*: physiological genetics

R. D. Brock, M.Agr.Sc., Ph.D.: radiation genetics, cytogenetics

H. Daday, M.Sc.: genetics and breeding of lucerne

C. I. Davern, M.Sc.Agr., Ph.D.: molecular genetics

O. H. Frankel, D.Sc., D.Agr., F.A.A., F.R.S., *Honorary Senior Research Fellow*:
genetics, cytology

J. B. Griffing, M.Sc., Ph.D.: mathematical genetics

B. D. H. Latter, B.Sc.Agr.Hons., Ph.D.: quantitative genetics in plant breeding

J. R. McWilliam, B.Sc.For.Hons., M.F., Ph.D.: genetics and pasture plant
breeding

E. A. Schwinghamer, B.Sc., Ph.D.: microbial genetics

D. C. Wark, M.Agr.Sc.: genetics and breeding of tobacco, disease resistance

(ii) *Plant Introduction*

H. S. McKee, B.A., D.Phil.: tropical and sub-tropical species

C. A. Neal-Smith, B.Agr.Sc.: agronomic trials of introduced plants

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(iii) *Structural Botany*

C. Barnard, D.Sc.: plant anatomy, morphology, floral histogenesis

(iv) *Systematic Botany*

Miss N. T. Burbidge, D.Sc., *Herbarium Curator*

(v) *Microbiology*

C. J. Shepherd, B.A., Ph.D., *Section Head*: biochemistry of host-pathogen relationships

F. J. Bergersen, D.Sc.: bacterial cytology, nitrogen fixation

I. A. M. Cruickshank, M.Sc.Hons.: mechanism of disease reaction

W. F. Dudman, B.Sc.Hons., Ph.D.: immunology; immunochemistry

A. H. Gibson, B.Sc.Agr.Hons., Ph.D.: physiology of legume nodulation

D. J. Goodchild, B.Sc.Agr.Hons., M.A., Ph.D.: host-parasite relations of plant viruses

Miss K. Helms, M.Sc., Ph.D.: host-parasite relations of plant viruses

F. W. Hely, M.Sc.Agr., M.S.: host influence, legume nodulation

A. V. Hill, M.Agr.Sc.: tobacco diseases

(vi) *General Chemistry and Soil Fertility*

C. H. Williams, M.Sc., *Section Head*: sulphur and phosphorus in plant and soil

S. M. Bromfield, M.Agr.Sc., Ph.D.: relationship of soil microbiology to plant

nutrition; phosphate metabolism

D. J. Cosgrove, B.Sc.Hons., Ph.D.: forms of phosphorus in soil

D. J. David, M.Sc.: spectrography of plants and soils

J. R. Freney, M.Sc.: nitrogen and sulphur availability

J. Lipsett, B.Agr.Sc.Hons.: soil nitrogen and phosphorus studies

J. R. Simpson, M.Sc., Ph.D.: pasture ecology—nitrogen availability

A. Steinbergs, Chem.Eng. (Ph.D. equiv.): sulphur in plant and soil

(vii) *Plant Nutrition*

A. J. Anderson, D.Sc.Agr., *Section Head*: legume nodulation and symbiotic nitrogen fixation

D. Bouma, Ir.Agr.: short-term responses of field crops upon removal of nutritional stresses

K. D. McLachlan, B.Sc.Agr., B.Com.: phosphorus and sulphur deficiencies

D. N. Munns, B.Sc.Agr.Hons., Ph.D.: factors affecting the differential uptake of nutrients by different species

D. Spencer, B.Sc.Hons., Ph.D.: biochemistry of inorganic nitrogen and sulphur metabolism and photosynthesis

K. Spencer, B.Sc.Agr.Hons., M.S.: factors affecting the occurrence of marginal deficiencies in pasture

(viii) *Plant Biochemistry*

J. E. Falk, M.Sc., Ph.D., F.A.A., *Section Head*: chemistry and biosynthesis of porphyrins, haems and haemoproteins

Miss J. M. Anderson, M.Sc.Hons., Ph.D.: initial stages in photosynthetic processes

C. A. Appleby, B.Sc.Hons., Ph.D.: respiratory enzymes; nitrogen fixation

Miss S. V. Binns, M.Sc., Ph.D.: synthetic organic chemistry

N. K. Boardman, M.Sc., Ph.D.: structure and biochemistry of chloroplasts

W. Bottomley, B.Sc.Hons., Ph.D.: phytochemistry; cell growth substances, naturally occurring antifungal compounds

C. G. Greenham, M.Sc.: biophysics; chemical control of weeds; determination of plant injury

D. M. Langbridge, B.Sc., Ph.D.: relationship of physico-chemical properties to biological activity

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J. N. Phillips, M.Sc., Ph.D.: biophysics; surface and colloid chemistry; physico-chemical studies of porphyrins

K. V. Temple, A.B., M.S., Ph.D.: interconversion of inorganic substances by micro-organisms

S. W. Thorne, B.Sc.Hons.: electronic instrumentation

P. A. Trudinger, B.Sc.Hons., Ph.D.: sulphur metabolism in micro-organisms
N. A. Walker, B.Sc.Hons., Ph.D.: biophysics; plant cell-membrane studies; micro-electrode measurements

P. R. Whitfeld, B.Sc.Hons., Ph.D.: nucleic acid metabolism

J. G. Wilson, M.Sc., Ph.D.: chemistry of antifungal compounds from plants

(ix) *Plant Physiology*

L. A. T. Ballard, M.A., M.Agr.Sc., Ph.D., *Section Head*: seed physiology; photoperiodism; controlled environment investigations

L. T. Evans, B.Sc., M.Agr.Sc., D.Phil.: photoperiodism; vernalization, controlled environment investigations

N. P. Kefford, M.Sc., Ph.D.: growth regulators; morphogenesis

A. H. G. C. Rijven, B.Sc., Ph.D.: cuzyme patterns in ripening and germinating seeds

I. F. Wardlaw, B.Agr.Sc.: climatic control of assimilation and translocation

C. N. Williams, M.Sc., Ph.D.: crop physiology

R. F. Williams, D.Sc.: growth and differentiation; crop physiology

J. A. Zwar, M.Agr.Sc., Ph.D.: growth regulators and morphogenesis

(x) *Agricultural Physics*

J. R. Philip, B.C.E., D.Sc., *Section Head*: transfer of heat, water and soluble salts in soil, diffusion, micrometeorology

O. T. Denmead, B.Agr.Sc.Hons., Ph.D.: light-carbon dioxide interactions in plant growth, water availability and evapotranspiration

D. E. Elrick, B.S.A.Hons., M.S., Ph.D.: water movement in unsaturated soil, gaseous diffusion from soils

(xi) *Ecology*

C. W. E. Moore, M.Agr.Sc., *Section Chairman*: soil nutrient status and associations of *Eucalyptus* species

W. D. Andrew, M.Agr.Sc.: establishment and distribution of *Medicago* spp.

E. F. Biddiscombe, M.Sc.Agr.: microclimate and plant growth

J. A. Carnahan, M.Sc.Hons., Ph.D.: weeds of non-arable low fertility areas

A. B. Costin, B.Sc.Agr.Hons.: hydrology and plant associations of alpine areas

P. W. Michael, B.Agr.Sc.Hons., Ph.D.: weeds of high fertility pastures

R. M. Moore, M.Sc.Agr.: plant sociology

(xii) *Grassland Agronomy*

F. H. W. Morley, B.V.Sc., Ph.D., *Section Head*: pasture improvement and management, plant breeding

G. W. Arnold, M.Sc.Agr.: pasture intake and management studies

K. W. Clark, B.S.Agr., M.S., Ph.D.: pasture management

(xiii) *Controlled Environment Laboratory*

L. T. Evans, B.Sc., M.Agr.Sc., D.Phil., *Officer-in-Charge*: photoperiodism; vernalization, controlled environment investigations

(b) At REGIONAL PASTORAL LABORATORY, DENILIQUIN

Charlotte Street, Deniliquin, N.S.W. Tel.: Deniliquin 331. 'Grams: Coresearch, Deniliquin

L. F. Myers, M.Agr.Sc., *Officer-in-Charge*: irrigation—pasture growth

R. L. Burt, B.Sc., Ph.D.: pasture physiology

J. L. Davidson, M.Sc.Agr.: pasture growth—light

COMMONWEALTH OF AUSTRALIA

C. R. Kleinig, B.Sc.Agr.Hons.: pasture nutrition—nitrogen
J. H. Leigh, B.Sc.Hons., Ph.D.: ecology of semi-arid vegetation
R. H. Sedgley, M.Sc.Agr.: soil aeration—growth
J. Warren Wilson, M.S., D.Phil.: ecology of semi-arid vegetation

- (c) AT WESTERN AUSTRALIAN REGIONAL LABORATORY
C.S.I.R.O. Private Bag, P.O., Nedlands, W. Aust. Tel.: WM 2451 (Perth).
'Grams: Coresearch, Perth
- R. C. Rossiter, B.Sc.Agr., D.Sc.Agr., *Officer-in-Charge*: ecology, pastures
E. T. Bailey, B.Sc.Hons.: plant introduction
N. J. Barrow, M.Agr.Sc., Ph.D.: plant nutrition
A. B. Beck, M.Sc.: biochemistry of clover dominant pastures
H. L. Davies, B.Sc.Agr.Hons.: pasture utilization
E. A. N. Greenwood, D.D.A., B.Agr.Sc., Ph.D.: nitrogen nutrition of pastures
A. W. Humphries, B.Sc.Agr.Hons.: ecology, pastures
P. G. Ozanne, B.Sc.Agr.: plant nutrition
F. J. Roberts, B.Sc.Agr.Hons.: plant-soil-water relations on deep sands
- (d) AT TOBACCO RESEARCH INSTITUTE
Box 172, Mareeba, Queensland. Tel.: Mareeba 304. 'Grams: Coresearch, Mareeba
W. J. Lovett, M.Agr.Sc., *Acting Officer-in-Charge*: agronomy
G. P. H. W. Geisler, Ph.D.Agr.Sc.: plant breeding, disease resistance
N. K. Matheson, M.Sc., Ph.D.: plant biochemistry
- (e) AT TASMANIAN REGIONAL LABORATORY
"Stowell", Stowell Avenue, Hobart, Tas. Tel.: 2 2786, 2 2787 (Hobart).
'Grams: Coresearch, Hobart
D. Martin, D.Sc., *Officer-in-Charge*: fruit investigations; storage problems
T. L. Lewis, Ph.D.: fruit investigations; storage problems
- (f) AT FIELD STATION, APPLETHORPE
P.O. Box 10, Appletorpe, Queensland. Tel.: Stanthorpe 255
L. A. Thomas, M.Sc., *Officer-in-Charge*: fruit investigations; storage problems; stock and scion studies
- (g) AT PASTORAL RESEARCH LABORATORY
C.S.I.R.O., Private Mail Bag, Armidale, 5N, N.S.W. Tel.: Uralla 193, 200,
201. 'Grams: Coresearch, Armidale
R. L. Davidson, B.Sc.Hons., Ph.D.: ecology of pasture insects; inter-relationships of pasture environments and insect numbers
- (h) AT WAGGA AGRICULTURAL RESEARCH INSTITUTE
Wagga, N.S.W. Tel.: Wagga 3955
K. Hoen, M.Sc., Ph.D.: genetics, grass breeding
R. N. Oram, B.Agr.Sc.Hons., Ph.D.: genetics, grass breeding
- (i) AT "GLEN LOSSIE" FIELD STATION
Private Mail Bag, Kojonup, W. Aust. Tel.: Kojonup 81
E. R. Watson, M.Sc.Agr., *Officer-in-Charge*: soil fertility
- (j) AT CUNNINGHAM LABORATORY
Mill Road, St. Lucia, S.W.6, Brisbane, Queensland. Tel.: 7 3121 (Brisbane).
'Grams: Coresearch, Brisbane
R. J. Williams, M.Sc.: plant introduction, plant geography, adaptive variation

COMMONWEALTH OF AUSTRALIA

- (k) AT UNIVERSITY OF QUEENSLAND
George Street, Brisbane, Queensland. Tel.: B 2501 (Brisbane)
L. J. Webb, M.Sc., Ph.D.: rain forest ecology, phytosociology
- (l) AT UNIVERSITY OF MELBOURNE
School of Agriculture, University of Melbourne, Parkville, N.2, Vic. Tel.: 34 6872 (Melbourne)
L. H. P. Jones, B.Agr.Sc., Ph.D.: soil and plant chemistry; manganese and molybdenum; chemistry silicon in the cycle: soil-plant-animal
Miss Angela A. Milne, B.Sc., Ph.D.: mineralogy, silicon in cycle: soil-plant-animal

14. Division of Soils

- (a) DIVISIONAL HEADQUARTERS
Waite Road, Urrbrae, S. Aust. (Private Mail Bag No. 1, G.P.O., Adelaide, S. Aust.) Tel.: 79 3605. 'Grams: Co-research, Adelaide
J. K. Taylor, B.A., M.Sc., M.Sc.Agr., Chief: land utilization, pedology
- (i) *Soil Chemistry*
C. S. Piper, D.Sc., Principal Chemist: soil fertility
A. W. Fordham, B.Sc., D.Phil.: soil phosphorus
J. T. Hutton, B.Sc.: soil genesis, analytical techniques
A. C. Oertel, M.Sc.: spectrography
M. Raupach, M.Sc.: physico-chemical investigations, pine tree nutrition
H. C. T. Stacc, M.Sc.: soil salinity
B. M. Tucker, B.A., M.Sc.: physico-chemical investigations, soil potassium
- (ii) *Soil Physics*
T. J. Marshall, M.Agr.Sc., Ph.D., Principal Soil Physicist: soil water relations
J. S. Colville, M.Sc.: soil water relations
W. W. Emerson, B.A., Ph.D.: soil structure
E. L. Greacen, B.Sc.Agr., Ph.D.: soil tillage, soil structure
C. G. Gurr, B.Sc.: soil water relations
J. W. Holmes, M.Sc.: soil water relations, evaporation
- (iii) *Soil Microbiology*
R. J. Swaby, M.Sc., M.Agr.Sc., Ph.D.: Principal Soil Microbiologist: soil organic matter
G. D. Bowen, M.Sc.: mycorrhiza investigations, *Rhizobium*
J. R. Harris, M.Sc.: *Rhizobium* investigations
J. N. Ladd, M.Sc., Ph.D.: hydrocarbon decomposition
A. D. Rovira, B.Sc.Agr., Ph.D.: rhizosphere investigations
- (iv) *Soil Survey and Pedology, Adelaide, S.A.*
C. G. Stephens, D.Sc., Principal Pedologist: soil classification, land utilization
G. Blackburn, B.Agr.Sc.: pedology
G. G. Beckmann, M.Sc.: pedology
R. W. Jessup, M.Sc.: pedology
K. H. Northcote, B.Agr.Sc.: soil classification and pedology
W. T. Ward, M.Sc.: geomorphology and pedology
C. B. Wells, M.Agr.Sc.: micropedology
- Alice Springs, N.T.*
W. H. Litchfield, B.Sc.Agr.: pedology

COMMONWEALTH OF AUSTRALIA

(v) Mineralogy

K. Norrish, M.Sc., Ph.D., *Senior Mineralogist*: clay mineralogy, spectroscopy
E. W. Radoslovich, M.Sc., Ph.D.: mineral weathering, mica structure
J. A. Rausell Colom, B.Sc., Ph.D.: clay mineralogy

(b) QUEENSLAND REGION

C/- Cunningham Laboratory, C.S.I.R.O., Mill Road, St. Lucia, S.W.6,
Queensland. Tel.: 7 3121 Brisbane. 'Grams: Coresearch, Brisbane
G. D. Hubble, B.Agr.Sc., *Officer-in-Charge*: pedology
R. S. Beckwith, B.Sc., *Senior Chemist*: general soil chemistry, soil silica
C. J. de Mooy, I.i.: pedology
R. J. Isbell, M.Sc.: pedology
A. E. Martin, B.Sc., D.Sc.Agr., *Senior Chemist*: soil fertility, nitrogen cycle
T. R. Paton, B.Sc.: pedology
G. B. Stark, M.Sc., *Soil Physicist*: soil water relations and structure

(c) SOUTH EASTERN REGION

C/- C.S.I.R.O. Laboratories, Black Mountain via City, Canberra, A.C.T.
(P.O. Box 109, Canberra City, A.C.T.) Tel.: J. 0455. 'Grams: Coresearch,
Canberra. Teleprinter: CBA 203
B. E. Butler, B.Sc.Agr., *Officer-in-Charge*: pedology
J. A. Beattie, B.Sc.Agr., Ph.D.: pedology
R. Brewer, B.Sc., *Senior Mineralogist*: micropedology, soil microscopy
J. D. Colwell, B.Sc.Agr., Ph.D., *Senior Chemist*: soil fertility, soil phosphorus
R. J. Hunter, B.Sc., *Chemist*: micropedology
D. S. McIntyre, M.Sc., Ph.D., *Senior Soil Physicist*: soil structure
J. K. Rutherford, B.Sc., Lis.Agr. (Ph.D. equiv.): soil microscopy
J. R. Sleeman, B.Sc.Agr.: micropedology, soil microscopy
D. C. van Dijk, Ing.Agr., D.Sc.: pedology, geomorphology
P. H. Walker, M.Sc.Agr.: pedology

Armidale, N.S.W.

W. M. McArthur, B.Sc.: pedology, soil fertility

Griffith, N.S.W.

J. Loveday, M.Agr.Sc., Ph.D.: pedology, soil fertility

(d) TASMANIAN REGION

C/- Tasmanian Regional Laboratory, C.S.I.R.O., "Stowell", Stowell Avenue,
Hobart, Tas. Tel.: 2 2786, 2 2787. 'Grams: Coresearch, Hobart
K. D. Nicolls, B.Sc., B.Agr.Sc., *Officer-in-Charge*: pedology
S. N. Adams, B.A. (Oxon.), D.Phil., *Chemist*: soil chemistry, geochemistry
G. Dimmock, B.Sc.: pedology

(e) WESTERN AUSTRALIAN REGION

C/- Western Australian Regional Laboratory, C.S.I.R.O., University Grounds,
Nedlands, W. Aust. (C.S.I.R.O., Private Mail Bag, Post Office, Nedlands,
W. Aust.) Tel.: 86 2451 Perth. 'Grams: Coresearch, Perth
M. J. Mulcahy, B.Sc., Ph.D., *Officer-in-Charge*: pedology
E. Bettenay, M.Agr.Sc.: pedology
A. V. Blackmore, B.Sc., Ph.D., *Soil Physicist*: soil water relations and soil struc-
ture
H. M. Churchward, M.Sc.Agr.: pedology
K. C. Marshall, B.Sc.Agr., Ph.D., *Soil Microbiologist*: nitrification, *Rhizobium*
investigations
K. G. Tiller, M.Sc., Ph.D., *Soil Chemist*: physico-chemical investigations,
geochemistry

COMMONWEALTH OF AUSTRALIA

15. Division of Tropical Pastures

Cunningham Laboratory, Mill Road, St. Lucia, S.W.6, Queensland.
Tel.: Brisbane 7 3121. 'Grams: Coresearch, Brisbane

J. Griffiths Davies, B.Sc.Hons., Ph.D., D.Sc., *Chief of Division*
A. G. Eyles, B.Agr.Sc., *Laboratory Secretary*

(a) AGROSTOLOGY AND ECOLOGY

J. Griffiths Davies, B.Sc.Hons., Ph.D., D.Sc., *Leader*: agrostology brigalow region, pasture ecology
W. W. Bryan, M.Agr.Sc.: agrostology, humid coastal lands
J. E. Coaldrake, M.Sc.: autecology of brigalow (*Acacia harpophylla*)
L. A. Edye, B.Agr.Sc.Hons.: agrostology, hrigalow region
R. J. Jones, B.Agr.Sc.Hons.: pasture ecology, species assessment
R. Roe, B.Agr.Sc.: pasture ecology, pasture management
N. H. Shaw, B.Agr.Sc.Hons.: agrostology, spear grass region
L. 't Mannetje, Ir. (Wag.): agrostology, spear grass region
J. C. Tothill, B.Agr.Sc., Ph.D.: autecology of spear grass (*Heteropogon contortus*)

(b) GENETICS, PLANT BREEDING AND LEGUME BACTERIOLOGY

E. M. Hutton, B.Agr.Sc., D.Sc.: genetics, pasture legume breeding
K. S. McWhirter, B.Agr.Sc.Hons., Ph.D.: genetics, pasture grass breeding
D. O. Norris, D.Sc.Agr.: legume bacteriology, *Rhizobium* nutrition
A. J. Pritchard, B.Sc.Hons., Ph.D.: cytogenetics, pasture sorghum breeding

(c) PLANT CHEMISTRY AND PHYSIOLOGY, PLANT AND ANIMAL NUTRITION

C. S. Andrew, M.Agr.Sc.: plant nutrition, nutrient uptake
R. G. Coleman, B.Agr.Sc., D.I.C., Ph.D.: plant physiology
C. T. Gates, M.Sc.: plant physiology, growth studies
M. P. Hegarty, M.Sc., Ph.D.: plant chemistry, amino acids in plants
E. F. Henzell, B.Agr.Sc.Hons., Ph.D.: soil fertility, nitrogen studies

(d) AT COOPER LABORATORY, LAWES

R. Milford, B.Agr.Sc.Hons.: *Officer-in-Charge*: animal nutrition, pasture evaluation
J. J. Yates, B.Agr.Sc.Hons., Ph.D.: agrostology, brigalow region

16. Wheat Research Unit

C/o The Bread Research Institute of Australia, Epping Road, North Ryde, N.S.W. (Private Bag, P.O., North Ryde, N.S.W.). Tel.: 88 0211. 'Grams: Care Bresearch, Sydney

E. E. Bond, A.R.M.T.C., F.R.A.C.I., *Officer-in-Charge*
M. V. Tracey, M.A., *Leader of Unit*: kinetics of enzymes at surfaces
J. W. Lee, Ph.D.: biochemical studies of wheat proteins
D. J. Winzor, Ph.D.: biophysical studies of wheat proteins

17. Wildlife Survey Section

"Gungahlin", Barton Highway, Canberra, A.C.T. (P.O. Box 109, Canberra City, A.C.T.) Tel.: J 2328, J 2329, J 2320. 'Grams: Coresearch, Canberra
H. J. Frith, B.Sc.Agr., *Officer-in-Charge*: marsupial and bird ecology
J. E. Bromell, B.Agr.Sc.: dingo investigations
J. H. Calaby, Dip.App.Chem., *Ecologist*: marsupial ecology
R. Carrick, B.Sc., Ph.D., *Ornithologist*: bird ecology (Australian magpie; Antarctic species)
S. J. J. F. Davies, B.A., *Ornithologist*: study of emu and black cockatoo
A. L. Dyce, B.Sc.Agr., *Ecologist*: rabbit ecology
B. V. Fennessy, B.Agr.Sc., *Agricultural Scientist*: rabbit control

COMMONWEALTH OF AUSTRALIA

- M. E. Griffiths, D.Sc., *Physiologist* and *Biochemist*: rabbit and marsupial investigations
Miss S. E. Ingham, B.A., *Ecologist*: Antarctic and Australian seals and birds
K. Myers, B.Sc., *Ecologist*: rabbit ecology
R. Myktytowycz, D.V.M. (Munich), *Veterinary Surgeon*: marsupial parasitology
W. E. Poole, B.Sc., *Ecologist*: marsupial ecology
M. G. Ridpath, B.Sc., *Ornithologist*: Tasmanian native hen
F. N. Robinson, B.A.: animal sounds and communication
I. C. R. Rowley, B.Agr.Sc., *Ornithologist*: ravens
D. L. Serventy, B.Sc., Ph.D., *Ornithologist*: bird ecology, especially short-tailed shearwater

18. Research Institute sponsored by C.S.I.R.O.

AUSTRALIAN WINE RESEARCH INSTITUTE
Urrbrae, S. Aust. (Private Mail Bag No. 1, G.P.O., Adelaide, S. Aust.)
Tel.: 79 3611

C.S.I.R.O., until early 1956, conducted oenological research at the Waite Agricultural Research Institute. With the formation of the Australian Wine Research Institute, the responsibility for this work has passed to the latter Institute.

- J. C. M. Fornachon, B.Agr.Sc., M.Sc., *Director*: wine microbiology
B. C. Rankine, M.Sc.: wine yeasts; wine chemistry

B. DEPARTMENT OF THE INTERIOR

Forestry and Timber Bureau

Canberra, A.C.T. Tel.: U 8231. 'Grams: Forbureau, Canberra
M. R. Jacobs, M.Sc., Dr.Ing., Ph.D., Dip.For. (Oxon.), *Director-General*

(a) DIVISION OF EDUCATION

Canberra
K. P. McGrath, B.Sc., M.F., Dip.For., *Acting Principal*
L. T. Carron, M.Sc.For., Dip.For. (AFS), Dip.For. (Oxon.), *Acting Deputy Principal*
A. G. Brown, B.Sc.For., Dip.For., *Acting Lecturer*: silviculture
N. Hall, B.For.Sc., A.M.A.I.C., *Senior Lecturer*: engineering and utilization
C. D. Hamilton, B.Sc., Dip.For., *Lecturer*: soils and botany
W. A. Heather, B.Sc.For., Dip.For., *Lecturer*: pathology and wood technology

(b) DIVISION OF SILVICULTURAL RESEARCH

Canberra
D. A. N. Cromer, D.Sc.For., M.Sc., Dip.For., *Officer-in-Charge*
J. P. Cameron, B.Sc., B.Sc.For., Dip.For., *Forestry Officer*: seed
J. M. Fielding, M.Sc.For., Dip.For., *Senior Forestry Officer*: tree breeding
R. T. G. Greaves, B.Sc.For., Dip.For., *Forestry Officer*: entomology
R. D. Johnston, D.F.C., B.Sc.Hons., Ph.D., D.I.C., *Senior Forestry Officer*: botany
A. G. McArthur, B.Sc.For., Dip.For., *Senior Forestry Officer*: fire protection
W. Stahl, Dip.Agr., *Forestry Officer*: pathology
H. D. Waring, B.Sc.Hons., *Senior Forestry Officer*: soils

Dover, Tas.
P. J. Bowling, B.Sc.For., Dip.For., *Forestry Officer*: yield tables

COMMONWEALTH OF AUSTRALIA

Dwellingup, W. Aust.

F. D. Podger, Dip.For., *Forestry Officer*: silviculture

Mt. Burr, S. Aust.

C. K. Pawsey, B.Sc.For., Dip.For., *Forestry Officer*: silviculture

J. H. Ruiter, I.i. (Wag.), *Forestry Officer*: forest soils

Traralgon, Vic.

K. G. Eldridge, M.Sc., Dip.For.(Tech.), *Forestry Officer*: tree breeding

(c) DIVISION OF FOREST MANAGEMENT RESEARCH

Canberra

D. A. N. Cromer, D.Sc.For., M.Sc., Dip.For., *Acting Officer-in-Charge*

R. J. Slinn, B.Sc.For., Dip.For., *Senior Forestry Officer*: Technical Assistant to Director-General

M. L. Benson, B.Sc.For., Dip.For., *Forestry Officer*: mensuration and inventory

Darwin, N.T.

R. W. Evans, B.Sc.For., Dip.For., *Senior Forestry Officer*: silviculture

R. Levington, B.Sc.For., Dip.For., *Forestry Officer*: introductions

J. P. Hauser, B.Sc.For., Dip.For., *Forestry Officer*: silviculture

(d) DIVISION OF TIMBER SUPPLY ECONOMICS

Cnr. Spring and Latrobe Streets, Melbourne, C.I. Tel.: 32 4541

A. G. Hanson, B.Sc.For., Dip.For., B.Com., *Officer-in-Charge*

T. D. Blight, B.Sc., Dip.For., *Senior Investigation Officer*: utilization

D. L. Craker, B.Sc., Dip.For., *Forestry Officer*: utilization

D. Wilson, B.Sc.For., *Statistical Officer*: statistics

G. COMMONWEALTH DEPARTMENT OF HEALTH

1. At Canberra, A.C.T. Tel.: M 9. 'Grams: Health, Canberra

(a) DIVISION OF PLANT QUARANTINE

In all States there is a Chief Quarantine Officer (Plants) who is an Officer of the Department of Agriculture.

T. H. J. Harrison, D.Sc.Agr., D.I.C., *Director*

J. R. Morschel, B.Sc.Agr., *Assistant Director*

F. M. Bennett, B.Sc.Agr., *Senior Research Officer (Agronomy and Horticulture)*

K. W. N. Dillon, B.Sc., *Senior Research Officer (Entomology)*

(b) DIVISION OF VETERINARY HYGIENE

In all States the principal Veterinary Officer is the Chief Quarantine Officer (Animals).

K. S. McIntosh, B.V.Sc., H.D.A., *Director*

H. R. Peisley, B.V.Sc., Dip.Pub.Ad., *Assistant Director*

J. F. Sainty, B.V.Sc., M.R.C.V.S., *Veterinary Officer*

2. At Commonwealth Serum Laboratories, Melbourne, Vic.

Tel.: 38 2101. 'Grams: Serums, Melbourne

D. T. Oxer, D.V.Sc., *Principal Veterinary Consultant*

P. F. Lewis, B.V.Sc., *Veterinary Officer*

L. J. Laurie-Rhodes, B.V.Sc., *Animal Production Officer*

C. E. Liefman, B.V.Sc., *Animal Production Officer*

W. Nixon-Smith, B.Sc.Agr., *Assistant Controller (Animal Management)*

Miss B. Romberg, B.Sc.Agr., *Agricultural Officer*

COMMONWEALTH OF AUSTRALIA

D. DEPARTMENT OF PRIMARY INDUSTRY

Bureau of Agricultural Economics

Barton, Canberra, A.C.T. Tel.: U 0423. 'Grams: Agec, Canberra

(a) EXECUTIVE

A. C. B. Maiden, B.A., *Director*
R. A. Sherwin, B.Sc.Agr., *Assistant Director*
E. S. Hoffman, B.Sc.Agr., B.Com., M.Sc., *Assistant Director*
R. A. Patterson, B.Com., M.Sc., Ph.D., *Senior Economist*

(b) WOOL RESEARCH SECTION

D. D. Shaw, B.Sc.Agr., *Senior Project Officer*

(c) COMMODITIES SECTION

G. M. Percival, B.A., B.Com., *Principal Research Officer*

(d) GENERAL AND STATISTICS SECTION

E. A. Saxon, B.Com., *Principal Research Officer*

E. DEPARTMENT OF TERRITORIES

1. Northern Territory Administration

(a) AGRICULTURAL BRANCH

Darwin, N.T. Tel.: 489

W. M. Curteis, B.A., B.Sc.Agr., *Director*: rice, pastures and farm planning; direction of research in crops and pastures
E. J. Johnston, B.Sc.Agr., *Assistant Director*: direction of research in soils, plant pathology, entomology, biology, and agricultural chemistry
R. W. Albrecht, B.Sc.Agr., *Agronomist*: arid zone pastures, irrigated crops in Alice Springs district
Ching Sing Li, M.Sc., Ph.D., *Entomologist*: insect pests of rice
F. Exner, *Agricultural Chemist (Acting)*: chemistry of pastures, fodders, soils and waters
T. E. Friend, B.Sc.Agr., *Senior Agronomist*: pastures; crops, other than rice; vegetables; tropical fruits
J. B. Heaton, B.Sc., *Plant Pathologist*: diseases of rice, field crops, vegetables, and tropical fruits
T. R. Lawler, B.Sc.Agr., *Senior Agronomist (Rice)*: rice, crops and pastures in association with rice
J. S. Muspratt, B.A., *Soil Survey Officer*: soil survey
D. G. Tulloch, B.Sc.Agr., *Field Biologist*: biology of magpie goose and water buffalo
J. W. Turnour, D.D.A., *Agronomist-in-Charge, Upper Adelaide River Experiment Farm*: rice, irrigated crops and pastures in association with rice

(b) ANIMAL INDUSTRY BRANCH

P.O. Box 291, Alice Springs, N.T. Tel.: 626 and 627. 'Grams: Chiefvetooff, Alice Springs

J. H. Whittem, B.V.Sc., *Director of Animal Industry, Pathologist*: direction of research into animal disease and husbandry problems at large
G. A. Letts, B.V.Sc., *Assistant Director of Animal Industry*: direction of research into disease and husbandry problems in the northern portion of the Territory
A. D. Campbell, L.V.Sc., *Senior Veterinary Research Officer, Bacteriologist*: contagious bovine pleuropneumonia, tick fevers
G. M. Chippendale, B.Sc., *Systematic Botanist*: flora of the Northern Territory

COMMONWEALTH OF AUSTRALIA

- B. Hart, B.V.Sc., *Senior Animal Husbandry Officer*: research into husbandry and management problems of beef cattle industry
D. A. Hedges, B.Agr.Sc., *Animal Husbandry Officer*: research into animal husbandry and management problems, Northern Australia
P. T. Hooper, B.V.Sc., *Veterinary Officer*: field research animal diseases
A. E. Humble, B.V.Sc., R.D.A., *Veterinary Officer*: contagious bovine pleuro-pneumonia investigations
G. L. Michell, B.V.Sc., *Animal Husbandry Officer*: research into animal husbandry and management problems, Central Australia
L. R. Murray, B.Sc., *Organic Chemist*: chemical aspects of plant poisoning of livestock
A. E. Newsome, B.Sc., *Field Biologist*: fauna control problems in the Northern Territory
B. M. Paine, B.V.Sc., *Veterinary Officer*: field research animal diseases
C. W. Pearson, B.Sc., *Bacteriologist*: diagnosis and research connected with livestock industry diseases
B. D. Siebert, *Inorganic Chemist*: analyses of waters, dips, and research into chemical aspects of animal nutrition

2. Territory of Papua and New Guinea

(a) Department of Agriculture, Stock and Fisheries

Port Moresby. Tel.: Moresby 4121. Radiograms: Agric, Moresby
F. C. Henderson, B.Sc.Agr., M.L.C., *Director*

(i) DIVISION OF ANIMAL INDUSTRY

J. L. Anderson, B.V.Sc., *Chief of Division*: crossbreeding with Asian and European cattle
J. R. Egerton, B.V.Sc., Dip.Bact., *Pathologist/Bacteriologist*: atypical anthrax of pigs, clostridial diseases

(ii) DIVISION OF PLANT INDUSTRY

A. W. Charles, B.Sc.Agr., M.Sc., *Chief of Division*

Agronomy

Highlands Agricultural Experiment Station, Aiyura
A. J. Schindler, M.C., B.Agr.Sc., *Agronomist-in-Charge*: pyrethrum agronomy and breeding
R. R. Fraser, B.Sc.Agr.: arabica coffee agronomy and breeding

Plant Industry Centre, Bubia

K. J. Blackburn, B.Sc.Agr.: agronomy of lowland annual crops
C. S. Edwards, B.Sc.Agr.: pasture improvement and management

Agricultural Experiment Station, Epo, Bereina

P. L. Stallwood, B.Sc.Agr., *Agronomist-in-Charge*: rice agronomy and breeding

Lowlands Agricultural Experiment Station, Keravat via Rabaul

K. Newton, B.Sc.Agr., D.T.A., *Agronomist-in-Charge*: native food crops and rotations, robusta coffee agronomy and breeding
A. E. Charles, B.Sc.Agr.: coconut agronomy and breeding
G. I. Jamieson, B.Agr.Sc.: manila hemp agronomy and breeding
J. B. O'Donohue, B.Agr.Sc.: cacao improvement and processing

Chemistry

D. W. P. Murty, B.Sc.Agr., *Principal Chemist*: analysis of soils and agricultural products

Miss C. A. Fowler, B.Sc.: plant analysis

COMMONWEALTH OF AUSTRALIA

C. C. Martin, B.Sc.Agr.: soil analysis

P. J. Southern, B.Sc., *Senior Chemist*: plant nutrition and soil fertility
Miss P. M. Thorne, B.Sc.: plant analysis

Entomology

G. S. Dun, B.Sc.Agr., *Principal Entomologist*: biological control

J. H. Ardley, B.Sc.: control of cacao and coconut pests

J. H. Barrett, B.Agr.Sc.: chemical control of coffee pests

A. Catley, B.Sc.Agr.: chemical control of pests of lowland crops: systematics and biology of Coreidae

L. Smee, B.Sc.Agr.: chemical control of cacao pests; taxonomy and biology of Ceratopogonidae

J. J. H. Szent-Ivany, Ph.D., D.Econ. & Pol.Sc., *Senior Entomologist*: taxonomy and zoogeography

Plant Introduction

G. P. Keleny, B.A., D.D.A., *Plant Introduction Officer*

Plant Pathology

Miss D. E. Shaw, M.Sc.Agr., Ph.D., *Principal Plant Pathologist*: diseases of fungal origin and taxonomic mycology

M. J. Trinick, B.Sc.Agr.: microbiology (*Rhizobium*)

R. J. van Velsen, M.Agr.Sc.: virus diseases of tropical crops

Soil Survey

G. K. Graham, B.Sc.Agr., D.T.A., *Principal Soil Survey Officer*: land use and settlement

F. P. Aland, B.Agr.Sc.: soil and land use surveys

A. C. Hartley, B.Agr.Sc.: soil and land use surveys

J. A. Kelly, B.Sc.Agr.: soil and land use surveys

T. R. Morgan, B.Sc.Agr.: soil and land use surveys

(b) **Department of Forests**

Konedobu, Papua

W. R. Suttie, Dip.For., *Director*

3. **Norfolk Island Administration**

Norfolk Island

B. a'B. Marsh, B.Sc.Agr., *Agricultural Officer*: bean seed certification

F. AUSTRALIAN NATIONAL UNIVERSITY

School of General Studies

P.O. Box 197, Canberra City, A.C.T. 'Grams: Natuniv, Canberra

(a) DEPARTMENT OF BOTANY. Tel.: J 0422

L. D. Pryor, D.Sc. (Adel.), *Professor*: inheritance, experimental taxonomy and ecology in eucalyptus

E. G. Brittain, B.Sc., Ph.D. (Melb.): physiology; photosynthesis and mineral nutrition

D. M. Paton, B.Sc., Ph.D. (Tas.): physiology; growth and flowering

(b) DEPARTMENT OF ZOOLOGY. Tel.: 7 1515

J. D. Smyth, M.A., Sc.D., *Professor*: experimental parasitology; invertebrate physiology

R. E. Barwick, M.Sc., *Lecturer*: ecology of reptiles

W. L. Nicholas, B.Sc., Ph.D., *Senior Lecturer*: invertebrate nutrition; nematology

C. H. Tyndale-Biscoe, M.Sc., *Lecturer*: physiology of reproduction

COMMONWEALTH OF AUSTRALIA

A. H. Weatherley, M.Sc., Ph.D., *Lecturer*: freshwater ecology; physiology
Mrs. P. A. Woolley, B.Sc., *Lecturer*: physiology of reproduction

NEW SOUTH WALES

A. DEPARTMENT OF AGRICULTURE

Farrer Place, Sydney (Box 36, G.P.O., Sydney). Tel.: 2 0536. 'Grams:
Agridept, Sydney

G. Edgar, B.V.Sc., *Director-General of Agriculture*
H. J. Hynes, D.Sc.Agr., M.Sc. (Minn.), *Director of Agriculture*
J. L. Hager, D.F.C., LL.B., *Secretary*
S. L. Macindoe, Ph.D. (Minn.), B.Sc.Agr., *Chief Research Liaison Officer*
F. C. McCleery, B.Sc.Agr., *Biometristian*: biometry

1. Division of Animal Industry

Farrer Place, Sydney. Tel. 2 0536. 'Grams: Animalind, Sydney
R. M. Watts, B.V.Sc., *Chief, Division of Animal Industry*
R. A. Hall, B.V.Sc., *Deputy Chief, Division of Animal Industry*

(a) GLENFIELD VETERINARY RESEARCH STATION
Glenfield. Tel.: 6053-511/512/513

J. C. Keast, B.V.Sc., H.D.A., *Director of Veterinary Research*: toxæmic jaundice of sheep and leptospirosis
E. J. McBarron, B.V.Sc., *Principal Veterinary Research Officer*: metabolic diseases of cattle
H. E. R. Beattie, B.V.Sc., H.D.A., *Special Veterinary Research Officer*: artificial insemination of cows and infertility diseases
S. P. Hebdon, B.V.Sc., *Special Veterinary Research Officer*: ecto- and endoparasites of sheep and cattle and their control
B. P. Setchell, B.V.Sc., Ph.D. (Cantab.), *Special Veterinary Research Officer*: metabolic diseases of sheep and cattle
R. F. Bayfield, A.S.T.C.Chem.Dip., *Analyst*: Vitamin E and selenium metabolism
D. M. Helwig, B.V.Sc., *Veterinary Officer*: rhinitis in pigs and swine fever
D. Jakovljevic, M.B. (Marburg), *Research Officer*: infertility diseases and artificial insemination in cattle
M. Lindner, Dr.Med.Vet. (Bologna), *Veterinary Officer*: monocytosis in fowls
I. R. Littlejohns, B.V.Sc., *Veterinary Officer*: ovine brucellosis and eperythrozoonusis, sporadic bovine encephalomyelitis
P. McInnes, B.Sc.Wool Tech., *Livestock Officer*: drought feeding of sheep
T. O'Byrne, A.S.T.C., *Analyst*: toxicology, particularly of heavy metals

(b) POULTRY RESEARCH STATION
Seven Hills, Tel.: 622-2617

M. W. McDonald, M.Sc.Agr., Ph.D., *Livestock Research Officer*: poultry genetics and nutrition

(c) WOOL RESEARCH LABORATORY
Trangie Agricultural Research Station, Trangie. Tel.: Trangie 87

R. B. Dun, B.V.Sc., Ph.D., *Special Veterinary Research Officer*: heritability studies on characters of Merino sheep
W. A. Pattie, B.Sc.Wool Tech., *Livestock Officer*: sheep fertility and genetics
A. J. Williams, B.Sc.Agr., *Biologist*: nutrition and wool growth

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- (d) BOARD OF TICK CONTROL
Lismore. Tel.: Lismore 2674
J. H. P. Dingle, A.S.T.C., *Analyst*: chlorinated hydrocarbons and organic phosphates as used in acaricides
R. N. McCulloch, M.B.E., D.Sc.Agr., B.Sc., *Entomologist*: bionomics of the cattle tick
- (e) INFERTILITY LABORATORY
Graham Park Artificial Insemination Centre, Berry. Tel.: Berry 293
P. J. Mylrea, B.V.Sc., *Special Veterinary Research Officer*: infertility diseases of cattle
2. Division of Dairying
Farrer Place, Sydney. Tel.: 2 0536. 'Grams: Agridept, Sydney
A. V. Small, H.D.D., *Chief, Division of Dairying*
I. W. Scott, I.I.D.A., H.D.D., *Deputy Chief, Division of Dairying*
C. H. Gray, B.A., B.Sc., *Biometrician*
3. Division of Horticulture
Farrer Place, Sydney. Tel.: 2 0536. 'Grams: Agridept, Sydney
H. W. Eastwood, H.D.A., *Chief, Division of Horticulture*
J. A. Ballantyne, *Deputy Chief, Division of Horticulture*
B. Owen French, B.Sc.Agr., H.D.A., *Principal Fruit Officer*: research
G. R. Gregory, B.Sc.Agr., *Special Fruit Officer*: viticulture
J. A. Holbeche, H.D.A., *Special Fruit Officer*: stone fruits
E. C. Levitt, H.D.A., *Special Fruit Officer*: citrus
J. K. Long, B.Sc.Agr., *Fruit Officer*: citrus
E. C. Whittaker, *Special Fruit Officer*: pome fruits
- (a) AT C.S.I.R.O. FRUIT PRESERVATION LABORATORY, NORTH RYDE
Tel.: 88 0233. 'Grams: Foodpres, Sydney
K. J. Scott, B.Sc.Agr., Dip.Ed., *Fruit Officer*: fruit storage
- (b) GOSFORD CITRUS WASTAGE LABORATORY
Gosford. Tel.: Gosford 22481
D. Leggo, B.Sc.Agr., *Fruit Officer*: citrus preservation methods
J. A. Scberry, B.Sc.Agr., *Fruit Officer*: citrus preservation methods
- (c) MURWILLUMBAH LABORATORY
Murwillumbah. Tel.: Murwillumbah 305
H. J. Cann, H.D.A., *Special Fruit Officer*: tropical fruits
4. Division of Marketing and Agricultural Economics
Farrer Place, Sydney. Tel.: 2 0536. 'Grams: Agridept, Sydney
Research into economic problems of production and marketing of New South Wales farm products.
C. J. King, M.A., B.V.Sc., Dip.Pub.Ad., *Chief, Division of Marketing and Agricultural Economics*
P. C. Druce, B.Ec., *Principal Economics Research Officer*
G. C. McFarlane, B.Ec., *Special Economics Research Officer (Farm Management)*
B. K. Compton, B.Ec., *Economics Research Officer*
R. E. Cooke-Yarborough, B.Ec., *Economics Research Officer*
G. F. Donaldson, B.Sc.Agr., *Economics Research Officer*
D. E. MacCallum, B.Sc.Agr., *Economics Research Officer*
C. D. Throsby, B.Sc.Agr., *Economics Research Officer*
G. J. Tyler, M.Sc.Agr. (Lond.), *Economics Research Officer*

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5. Division of Plant Industry

Farrer Place, Sydney. Tel.: 2 0536. 'Grams: Agridept, Sydney
W. H. G. Poggendorff, B.Sc.Agr., H.D.A., H.D.D., *Chief, Division of Plant Industry*
A. C. Orman, H.D.A., *Deputy Chief, Division of Plant Industry*
W. T. Atkinson, B.Sc.Agr., M.S. (Wis.), *Assistant Principal Agronomist*: pastures
E. W. Bowmaker, H.D.A., *Special Agronomist*: irrigation
J. W. Boyle, H.D.A., *Special Agronomist*: maize, sorghum, fodder crops
F. F. Filan, B.Sc.Agr., *Senior Agronomist*: seed production
R. W. Fitzsimmons, B.Sc.Agr., *Senior Agronomist*: cereals
K. R. Green, B.Sc.Agr., *Special Agronomist*: weeds
R. J. Jessup, B.Sc.Agr., *Agronomist*: vegetables
L. R. Kavanagh, B.Sc.Agr., *Assistant Principal Agronomist*: research
T. E. Kitamura, B.Sc.Agr., B.A., *Special Agronomist*: rice, fibre, oil, miscellaneous crops
M. A. K. McDonald, H.D.A., *Senior Agronomist*: maize, sorghum, fodder crops
Miss A. I. Myers, *Seeds Officer*
N. S. Shirlow, B.Sc.Agr., *Principal Agronomist*: research
R. T. Spencer, H.D.A., *Special Agronomist*: vegetables
C. K. Vearns, B.Sc.Agr., H.D.A., *Principal Agronomist*: pastures
C. Walkden-Brown, H.D.A., *Special Agronomist*: cereals
M. H. Walker, B.Sc.Agr., *Agronomist*: pastures
Miss F. Walls, B.Sc. (Lond.), *Agronomist*: weeds

6. Division of Science Services

Victoria Road, Rydalmerle. Postal: Private Mail Bag No. 10, Post Office, Rydalmerle, N.S.W. Tel.: YY 0251
C. J. P. Magee, D.Sc.Agr., M.S., *Chief, Division of Science Services*

(a) BIOLOGY

W. S. Sutton, B.Sc.Agr., *Chief Biologist*: diseases of tomatoes, dairy bacteriology
Miss L. R. Fraser, D.Sc., *Senior Biologist*: diseases of citrus; diseases of grape vines
Miss J. Anderson, B.Sc.Agr., *Plant Pathologist*: diseases of ornamental plants
Miss B. J. Ballantyne, B.Sc.Agr., *Plant Pathologist*: diseases of vegetables, especially cucurbits
C. D. Blake, B.Sc.Agr., *Plant Pathologist*: nematology
R. J. Conroy, B.Sc.Agr., *Plant Pathologist*: diseases of vegetables
K. E. Hutton, B.Sc.Agr., *Plant Pathologist*: diseases of pome and stone fruits
P. F. Kable, B.Sc.Agr., *Plant Pathologist*: brown rot and other diseases of canning fruits
T. B. Kiely, D.Sc.Agr., *Plant Pathologist*: diseases of citrus fruits and nutritional disorders of citrus
R. W. McLeod, B.Sc.Agr., *Bacteriologist*: soil bacteriology
R. D. Pares, B.Sc.Agr., *Plant Pathologist*: diseases of pome and stone fruits
R. J. Richards, B.Sc.Agr., Ph.D., *Bacteriologist*: bacteriology of dairy products
R. J. Roughley, B.Sc.Agr., *Bacteriologist*: soil bacteriology
A. M. Smith, B.Sc.Agr., *Plant Pathologist*: diseases of cereals
P. G. Valder, B.Sc.Agr., Ph.D., *Plant Pathologist*: diseases of field crops and cereals
J. Walker, B.Sc.Agr., *Plant Pathologist*: diseases of vegetables

(b) BOTANY

Research on systematic botany and determination of weeds, grasses and other plants; tree planting on farm and pastoral holdings.
R. H. Anderson, B.Sc.Agr., *Director of Royal Botanic Gardens and National Herbarium, and Chief Botanist*
H. K. C. Mair, B.Sc., *Senior Botanist*

COMMONWEALTH OF AUSTRALIA

Miss J. W. Vickery, D.Sc., F.L.S., *Special Botanist*

Miss B. G. Briggs, B.Sc., Ph.D., *Botanist*

Miss N. C. Ford, B.Sc., *Botanist*

L. A. S. Johnson, B.Sc., *Botanist*

Miss M. D. Tindale, M.Sc., *Botanist*

(c) AGRICULTURAL CHEMISTRY

T. H. Johns, M.Sc., A.R.A.C.I., *Chief Chemist*

A. N. Old, B.Sc.Agr., *Senior Chemist*: geo-chemistry and water chemistry

D. K. O'Neill, M.Sc., A.S.T.C.Chem., A.R.A.C.I., *Special Analyst*: pesticides chemistry, cattle tick control investigations

B. Barkus, B.Agr., *Analyst*: plant chemistry

J. Bradley, B.Sc.Agr., *Analyst*: soil chemistry

P. R. Cary, B.Sc., *Analyst*: fruit chemistry

M. G. Chatfield, A.S.T.C., *Analyst*: waters (irrigation and stock), dairy chemistry

R. S. Chesterfield, B.Agr., *Analyst*: cereal chemistry

F. W. Cradock, B.Sc.Agr., *Analyst*: plant chemistry

P. W. Ellyard, B.Sc.Agr., *Analyst*: soil physics

W. S. Gilbert, B.Sc., *Analyst*: pesticides chemistry

C. A. L. Hawkins, B.Sc.Agr., *Analyst*: soil survey investigations and associated soil chemistry studies

C. S. M. Humphris, Dip.App.Chem., *Analyst*: regulatory chemistry and stock foods investigations

E. H. Jacob, B.Sc.Agr., *Analyst*: cereals and cereal products

H. F. Nardin, B.Sc., *Analyst*: spray residues chemistry

R. D. Polhill, B.Sc., *Analyst*: rice chemistry

M. F. Redies, M.Sc., Ph.D., A.R.A.C.I., *Analyst*: physical and radio chemistry

A. M. H. Ridder, B.Sc., *Analyst*: soil survey investigations

C. C. Short, B.Sc., *Analyst*: physical chemistry and spectrography investigations

A. Solvyns, B.Sc., *Analyst*: soil chemistry

I. A. Vimpany, B.Sc.Agr., *Analyst*: soil chemistry

R. G. Weir, B.Sc.Agr., *Analyst*: plant chemistry

(d) ENTOMOLOGY

S. L. Allman, B.Sc.Agr., M.Sc., *Chief Entomologist*

P. C. Hely, B.Sc.Agr., H.D.A., *Senior Entomologist*: citrus pests

G. A. J. Pasfield, B.Sc.Agr., *Special Entomologist*: argentine ants

G. J. Shanahan, B.Sc.Agr., *Special Entomologist*: insecticide resistance; sheep blowfly

T. V. Bourke, B.Sc.Agr., *Entomologist*: pasture scarabs

B. M. Braithwaite, B.Sc.Agr., *Entomologist*: banana, vegetable and pasture pests

M. Casimir, B.Sc.Agr., *Entomologist*: grasshoppers and timber pests

C. E. Chadwick, B.Sc., *Entomologist*: systematic entomology

A. H. Friend, B.Sc.Agr., *Entomologist*: fruit fly

M. J. Gaven, B.Sc.Agr., *Entomologist*: fruit pests

J. G. Gellatley, B.Sc.Agr., *Entomologist*: vegetable and citrus pests

F. A. C. Gibson, B.Sc., A.S.T.C., *Entomologist*: registration of pest destroyers; resistance studies

E. L. Jones, B.A., *Entomologist*: vegetable and fruit pests

N. C. Lloyd, B.Sc.Agr., *Entomologist*: pome and stone fruit pests

M. J. Watt, B.Sc.Agr., *Entomologist*: stored products

W. E. Wright, B.Sc.Agr., *Entomologist*: black beetle and pasture pests

7. Experiment Farms and Stations

(a) ALSTONVILLE TROPICAL FRUIT RESEARCH STATION, Alstonville

Tel.: Alstonville 130

D. S. Leigh, H.D.A., *Fruit Officer*: tropical fruits

COMMONWEALTH OF AUSTRALIA

- (b) BATHURST EXPERIMENT FARM, Bathurst. Tel.: Bathurst 3179
M. H. Campbell, B.Sc.Agr., *Agronomist*: serrated tussock, pastures
W. J. Greenhalgh, B.Sc.Agr., *Fruit Officer*: pome and stone fruits
C. H. Mort, H.D.A., *Fruit Officer*: pome and stone fruits
- (c) BERRY WELFARE FARM, Berry. Tel.: Berry 251
J. Strang, B.Sc.Agr., *Senior Agronomist*: pastures
- (d) GOSFORD CITRUS EXPERIMENT STATION, Gosford. Tel.: Gosford 2 1044
J. E. Cox, B.Sc., *Fruit Officer*: citrus
L. F. Mandelson, B.Sc.Agr., *Fruit Officer*: citrus
- (e) GRAFTON EXPERIMENT FARM, Grafton. Tel.: Carrs Creek 221
J. M. Colless, B.Sc.Agr., *Agronomist*: maize breeding
G. R. Hughes, B.Sc.Agr., *Agronomist*: maize breeding
G. P. M. Wilson, H.D.A., *Agronomist*: pastures
- (f) GRIFFITH VITICULTURAL NURSERY, Griffith. Tel.: Griffith 1530
J. M. Sidlow, B.Sc.Agr., *Fruit Officer*: drainage
C. R. Turkington, B.Sc.Agr., *Fruit Officer*: viticulture
- (g) INVERELL DISTRICT. Tel.: Inverell 519
J. D. Fahy, B.Sc.Agr., *Agronomist*: black soil scarab control
- (h) LEETON EXPERIMENT FARM, Leeton. Tel.: Yanco 18
P. Witschi, B.Sc.Agr., *Agronomist*: pasture management
L. G. Williams, B.V.Sc., M.Sc. (Oregon), *Special Veterinary Research Officer*: beef cattle nutrition and husbandry
I. D. Killeen, B.Sc.Agr., *Livestock Officer*: sheep husbandry and nutrition
- (i) LOWER MURRAY RESEARCH STATION, Dareton. Tel.: Dareton 366
F. S. Oldham, Dip.Agr. (W.A.), *Senior Fruit Officer*: citrus
- (j) MAITLAND DISTRICT, Maitland. Tel.: Maitland U 325
R. S. Wetherall, B.Sc.Agr., *Agronomist*: pastures
- (k) NEW ENGLAND AGRICULTURAL RESEARCH STATION, Glen Innes
Tel.: Glen Innes 163
G. R. Scott, B.Sc.Agr., *Senior Agronomist*: maize, popcorn breeding
D. C. Hosking, B.Sc.Agr. (Cantab.), *Agronomist*: potato breeding
P. M. Guerin, B.Sc.Agr. (Dublin), *Agronomist*: linseed and oat breeding
A. D. Doyle, B.Sc.Agr., *Agronomist*: tobacco culture
J. Medcalf, B.Sc.Agr., *Agronomist*: tobacco breeding
G. G. Robinson, B.Sc.Agr. (Natal), *Agronomist*: pastures
W. A. Trimmer, H.D.A., *Fruit Officer*: pome fruits
- (l) TAMWORTH AGRICULTURAL RESEARCH STATION, Tamworth
Tel.: Nemingha 282
W. V. Single, B.Sc.Agr., Ph.D., D.I.C., *Director of Research*: wheat physiology
E. M. Matheson, B.Sc.Agr., *Senior Agronomist*: wheat breeding
B. Inrie, B.Sc.Agr., *Agronomist*: summer crop breeding
R. Esdale, B.Sc.Agr., *Agronomist*: plant nutrition
K. Sheridan, B.Sc.Agr., *Agronomist*: pastures
- (m) TAREE DISTRICT, Taree. Tel.: Taree 131
T. A. O'Brien, B.Sc.Agr., *Agronomist*: pastures
- (n) TEMORA EXPERIMENT FARM, Temora. Tel.: Temora 115
R. H. Martin, B.Sc.Agr., *Research Officer*: wheat breeding
F. Von Mengersen, D.Agr. (Berlin), *Research Officer*: oat breeding

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- (o) TRANGIE AGRICULTURAL RESEARCH STATION, Trangie. Tel.: Trangie 87
R. D. B. Whalley, B.Sc.Agr., *Agronomist*: arid zone pastures
- (p) WOLLONGBAR AGRICULTURAL RESEARCH STATION, Lismore. Tel.: W'bar 201
W. J. C. Hudson, B.Sc.Agr., *Supervisor of Dairy Industry Research*
G. E. Bird, B.Agr.Sc., *Economics Research Officer*: farm management
R. L. Colman, B.Sc.Agr., *Agronomist*: pasture nutrition, utilization and species
J. M. Holder, B.V.Sc., *Veterinary Officer*: dairy cattle and pig nutrition
G. J. Murtagh, M.Sc.Agr., *Agronomist*: sub-tropical legumes and chemical seedbed preparation
F. G. Swain, B.Sc.Agr., Ph.D.(Md.), *Agronomist*: pasture establishment, management and utilization
B. R. Wilson, B.Rur.Sc., *Livestock Officer*: swine nutrition
- (q) YANCO AGRICULTURAL RESEARCH STATION, Yanco. Tel.: Yanco 5
D. J. McDonald, B.Sc.Agr., *Agronomist*: rice breeding
E. Boerema, B.Sc.Agr., *Agronomist*: rice experiments
P. R. Dann, B.Sc.Agr., *Agronomist*: pastures and pasture seed increase
H. D. R. Malcolm, B.Sc., *Fruit Officer*: pome and stone fruits
M. C. Stannard, B.Sc.Agr., *Fruit Officer*: citrus, irrigation
J. Sumeghy, B.Sc.Agr.(Bud.), *Agronomist*: vegetable breeding
J. W. Turpin, Q.D.H., *Fruit Officer*: apricots
- 8. Hawkesbury Agricultural College**
Richmond. Tel.: Richmond 5
B. Doman, B.Sc.Agr., H.D.A., *Principal*
W. McCarrol, A.C.T.S.M., A.I.C.A., *Deputy Principal*
S. G. Grimmett, B.Agr.Sc., *Agronomist*: pastures
S. R. Bakalor, D.Sc.Agr., *Special Dairy Officer*: dairy research
W. A. Barr, A.S.T.C., A.I.M.E., A.M.I.R., *Lecturer*: agricultural engineering; spray irrigation
J. D. Bryden, *Special Fruit Officer*: stone fruit, dried fruit
J. H. Burden, B.Sc., *Lecturer*: entomological morphology and systematics
B. O. E. Calder, B.Sc.Agr.(N.Z.), *Dairy Officer*: milking machines
D. W. Crowfoot, H.D.D., *Principal Dairy Officer*: Supervisor, School of Dairy Technology
A. Csizinsky, Dip.Hort.(Bud.), *Lecturer*: food technology
N. A. Cutts, H.D.A., *Livestock Officer (Bees)*: artificial insemination
A. Dowey, B.Sc., *Lecturer*: food technology
R. Gottl, D.Sc.Agr.(Bud.), *Senior Agronomist*: vegetable breeding
J. H. Gulliford, H.D.A., *Livestock Officer (Poultry)*: random sample tests
B. J. Hall, B.Sc.Agr., Dip.Ed., *Agronomist*: weed control
A. W. Hudson, B.Sc.(Wales), *Agronomist*: plant nutrition
N. S. Jones, B.V.Sc., *Veterinary Officer*: animal health and nutrition
D. G. Lundie-Jenkins, W.D.A., *Livestock Officer (Sheep)*: coastal pasture utilization
M. K. Maxwell, B.Sc.Agr., Dip.Ed., *Lecturer*: botanical cytology
J. Meade, B.Sc.Agr., *Lecturer*: microbiology of food processing
M. Mullin, B.Sc.Agr., *Lecturer*: botanical cytology
G. J. F. Smith, Ph.D.(Calif.), B.Sc.Agr., *Senior Dairy Officer*: dairy research
H. J. Williams, A.S.T.C., A.I.M.E., *Lecturer*: agricultural engineering; spray irrigation
- 9. Agricultural Research Institute**
Wagga. Tel.: Wagga 3955
A. T. Pugsley, B.Agr.Sc., D.Sc., *Director*: genetics and breeding cereals
L. H. Bird, M.Sc.Hons.(N.Z.), *Research Officer*: wheat quality

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- N. T. Clark, B.Rur.Sc., *Research Officer*: pastures
E. G. Cuthbertson, B.Sc.Agr., *Research Officer*: weeds, pastures
R. A. Fischer, B.Agr.Sc., *Research Officer*: cereals
G. D. Kohn, B.Agr.Sc., *Research Officer*: soil fertility
Mrs. H. K. Patterson, B.Sc.Agr., *Analyst*: agronomic survey
A. N. Smith, M.Sc. (Dunelm), *Research Officer*: soil fertility
R. R. Storrier, B.Sc.Agr., Ph.D. (Lond.), *Research Officer*: soil nitrogen
K. J. Symes, B.Sc.Agr., *Research Officer*: wheat breeding
A. C. Taylor, B.Sc.Agr., *Research Officer*: agronomic survey
P. C. Williams, B.Sc.Agr., Ph.D., *Research Officer*: cereal chemistry

10. Wagga Agricultural College

Wagga. Tel.: Wagga 3944, 3948, 4114

- F. C. Butler, B.Sc.Agr., Ph.D. (Cantab.), *Principal*
B. F. Atkins, B.Sc.Agr., *Lecturer*: chemistry of pasture silage
J. R. Davison, *Fruit Officer*: olives, almonds and stone fruits
B. P. Healy, B.V.Sc., *Veterinary Officer*: animal health and nutrition
K. S. Lysaght, H.D.A., *Lecturer*: sheep husbandry; fertility, nutrition of sheep

B. DEPARTMENT OF CONSERVATION

1. Conservation Authority of New South Wales

Conservation House, Cnr. Harrington and Essex Streets, Sydney (Box 4293, G.P.O., Sydney). Tel.: B 0535. 'Grams: Conservation, Sydney

C. K. Jacka, *Chairman*

2. Central Administration, Department of Conservation

Conservation House, Cnr. Harrington and Essex Streets, Sydney (Box 4293, G.P.O., Sydney). Tel.: B 0535. 'Grams: Conservation, Sydney

J. R. Butler, B.A., LL.B., *Under Secretary and Permanent Head*
J. N. Hodge, *Assistant Under Secretary*

3. Forestry Commission of New South Wales

44 Margaret Street, Sydney. (G.P.O. Box 2667, Sydney). Tel.: B 0236.
'Grams: Newforests, Sydney

E. L. S. Hudson, Dip.For. (Canb.), *Commissioner*
W. D. Muir, Dip.For. (Canb.), *Assistant Commissioner*
M. S. Thomson, *Assistant Commissioner*

(a) DIVISION OF FOREST MANAGEMENT

G. H. Maclean, Dip.For. (Canb.), *Chief of Division*
P. T. Cooke, B.Sc., Dip.For. (Canb.), *Deputy Chief of Division*
G. N. Baur, B.Sc., B.Sc.For., Dip.For. (Canb.), *Senior Forester*: silviculture
R. A. Curtin, B.Sc.For., Dip.For. (Canb.), *Forester*: silviculture
A. G. Floyd, M.Sc.For., Dip.For. (Canb.), *Forester*: silviculture
S. W. Gentle, B.Sc.For., Dip.For. (Canb.), *Forester*: silviculture
P. W. Hadlington, B.Sc.Agr., *Research Officer*: entomology
J. L. Henry, B.Sc., B.Sc.For., Dip.For. (Canb.), *Management Officer*
A. D. Lindsay, B.Sc.For. (Edin.), *Management Officer*
R. H. Luke, Dip.For. (Canb.), *Fire Control Officer*
K. R. Shepherd, B.Sc.For., Dip.For. (Canb.), *Forester*: silviculture

(b) DIVISION OF FOREST AND TIMBER RESOURCES

F. M. Bailey, B.Sc., Dip.For. (Canb.), Dip.For. (Oxon.), *Chief of Division*
R. B. McLean, M.I.S., *Deputy Chief of Division*
B. U. Byles, B.Sc., *Special Forester*: forest resources

COMMONWEALTH OF AUSTRALIA

(c) DIVISION OF WOOD TECHNOLOGY

E. B. Huddleston, B.Sc., B.E., *Chief of Division*
L. H. Bryant, A.S.T.C., A.R.A.C.I., *Deputy Chief of Division*
R. K. Bamber, A.S.T.C., *Research Officer*: wood structure
K. R. Bootle, B.Sc., *Research Officer*: timber utilization
G. L. Canaway, A.S.T.C., *Research Officer*: wood working machinery and sawmill design
D. W. Edwards, B.Sc.Agr., *Research Officer*: wood preservation
D. J. T. Hartigan, B.Sc.Agr., *Research Officer*: forest pathology
F. R. Humphreys, M.Sc., A.S.T.C., A.R.A.C.I., *Research Officer*: chemistry of forest products

(d) DIVISION OF ECONOMICS AND MARKETING

R. J. W. Ritchie, *Chief of Division*
A. H. Walker, *Deputy Chief of Division*
C. H. Grugon, B.Ec., *Economics Research Officer*

4. Soil Conservation Service of N.S.W.

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L. W. Smith, H.D.A., H.D.D., *Deputy Chief Soil Conservationist*
C. M. Blandford, H.D.A., *Special Soil Conservationist*: works and extension
R. W. Condon, B.Sc.Agr., *Senior Soil Conservationist*: research stations and publications
B. C. Fleck, B.Sc., *Soil Conservationist*: agrostology
R. Powles, B.Sc., A.Dip.For. (Cres.), *Special Soil Conservationist*: research and investigation

(a) GWYDIR SOIL CONSERVATION DISTRICT

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A. R. Tewksbury, H.D.A., *District Soil Conservationist*

Research Station

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K. S. Buckley, B.Sc.Agr., *Soil Conservationist*

(b) HUNTER SOIL CONSERVATION DISTRICT

P.O. Box 130, Scone. Tel.: 306
G. R. Wiltshire, H.D.A., H.D.D., *District Soil Conservationist*
N. A. Blake, H.D.A., *Resident Soil Conservationist*: catchment area
E. T. Clark, H.D.A., *Resident Soil Conservationist*: catchment area

Research Station

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W. G. Bryant, B.Sc.Agr., *Soil Conservationist*
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(c) LACHLAN SOIL CONSERVATION DISTRICT

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J. Bohanna, B.Sc.Agr., *Soil Conservationist*: farm planning

COMMONWEALTH OF AUSTRALIA

Research Station

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- (d) LOWER MACQUARIE SOIL CONSERVATION DISTRICT
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J. D. Colclough, H.D.A., *District Soil Conservationist*
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Research Station

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- (e) LOWER NAMOI SOIL CONSERVATION DISTRICT
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K. P. Bridge, H.D.A., *Officer-in-Charge*
I. F. Lynch, B.Sc.Agr., *Soil Conservationist*

- (f) METROPOLITAN SOIL CONSERVATION DISTRICT
Box 4293, G.P.O. Sydney. Tel.: B 0535

D. L. Lamy, H.D.A., *District Soil Conservationist*
D. G. Cameron, B.Sc.Agr., *Resident Soil Conservationist*: catchment area
R. T. Morland, B.Sc.For., *Soil Conservationist*: catchment area surveys

- (g) NORTH COAST SOIL CONSERVATION DISTRICT
P.O. Box 177, Kempsey. Tel.: 3765

G. W. Mort, H.D.A., *District Soil Conservationist*
D. A. Barr, B.Sc.Agr., *Soil Conservationist*: coastal sand drift

- (h) RIVERINA SOIL CONSERVATION DISTRICT
P.O. Box 10, Wagga. Tel.: 4304

R. E. Herrington, Q.D.A., *District Soil Conservationist*
J. R. H. Phillips, D.D.A., *Soil Conservationist*: farm planning

Research Station

P.O. Box S146, South Wagga. Tel.: 9601

A. F. Clough, H.D.A., *Officer-in-Charge*
H. R. Jones, B.Sc.Agr., *Soil Conservationist*

- (i) SOUTHERN SOIL CONSERVATION DISTRICT
P.O. Box 23, Yass. Tel.: 465

G. M. Pettit, H.D.A., *District Soil Conservationist*
L. R. Greenup, B.Sc.Agr., *Soil Conservationist*: catchment area studies
A. E. Plummer, H.D.A., *Resident Soil Conservationist*: catchment area

- (j) UPPER MACQUARIE SOIL CONSERVATION DISTRICT
P.O. Box 308, Orange. Tel.: 4946

H. T. Nicholas, H.D.A., *District Soil Conservationist*

COMMONWEALTH OF AUSTRALIA

(k) UPPER NAMOI SOIL CONSERVATION DISTRICT

P.O. Box 181, Tamworth. Tel.: 4741

T. F. Mau, H.D.A., *District Soil Conservationist*

J. L. Reeve, B.Sc.Agr., *Soil Conservationist*: farm planning

(l) WESTERN SOIL CONSERVATION DISTRICT

P.O. Box 118, Condobolin. Tel.: 313

J. C. Newman, B.Sc.Agr., *Research Officer and Botanist*

R. M. Jones, B.Sc.Agr., *Soil Conservationist*: ecology semi-arid region; erosion control

J. F. Warren, B.Sc., *Soil Conservationist*: ecology semi-arid region; erosion control

Hay

R. B. Hudson, B.Sc.Agr., *Soil Conservationist*: ecology semi-arid region; erosion control

Griffith

A. D. O'Brien, B.Sc.Agr., *Soil Conservationist*: ecology semi-arid region; erosion control

Nyngan

B. Unwin, B.Sc.Agr., *Soil Conservationist*: ecology semi-arid region; erosion control

5. Water Conservation and Irrigation Commission

Conservation House, Cnr. Harrington and Essex Streets, Sydney. Tel.: B 0535.

'Grams: Irrigation, Sydney

H. N. England, B.Sc., *Principal Irrigation Officer*

Research Section

Leeton

S. E. Flint, B.Sc.Agr., *Senior Research Officer*: in charge of section

B. V. Bridge, B.Sc.Agr., *salinity, reclamation*

M. E. Stannard, B.Sc.Agr.: *soil surveys, irrigation land-use*

Deniliquin

S. Pels, B.Sc.: *ground-water hydrology in relation to irrigation land-use*

Griffith

A. Stocklin, B.Sc.: *tile drainage, tube-well drainage*

C. UNIVERSITY OF NEW ENGLAND

1. Faculty of Agricultural Economics

Armidale, 5N. Tel.: Armidale 2231

J. N. Lewis, B.Ec. (Syd.), M.P.A. (Harv.), *Professor of Agricultural Economics and Dean of Faculty*

E. J. Waring, B.Sc.Agr. (Syd.), *Senior Lecturer in Farm Management and Sub-dean of Faculty*

J. H. Bell, M.A. (Syd.), Ph.D. (Syd.), *Associate Professor of Rural Sociology*

J. H. Duloy, B.Sc.Agr. (Syd.), *Lecturer in Agricultural Economics*

W. McD. Herr, B.S. (Corn.), M.S. (Ill.), Ph.D. (Corn.), *Senior Lecturer in Farm Management*

B. J. F. James, B.Sc. (Wales), Dip.Agr.Econ. (Oxon.), *Research Fellow (Wool Industry)*

W. F. Musgrave, M.Sc.Agr. (Syd.), *Lecturer in Agricultural Economics*

COMMONWEALTH OF AUSTRALIA

R. A. Pearse, M.Sc.Agr. (W.A.), *Lecturer in Farm Management*
J. van der Meulen, B.Ed. (Syd.), *Lecturer in Agricultural Marketing*

2. Department of Botany

Armidale, 5N. Tel.: Armidale 2231

- N. C. W. Beadle, D.Sc. (Syd.), *Professor of Botany*; ecological studies in semi-arid areas, with reference to soil conservation; soil nutrients (in particular, soil phosphate) in relation to plant distribution; fire; halophytes; nitrogen economy in semi-arid communities
Mrs. G. L. Davis, B.Sc., Ph.D. (Syd.), *Associate Professor*: embryology of Australian Compositae
R. A. Boyd, B.Sc. (Dunelm/Oxon.); physiology of xeromorphs
J. L. Charley, B.Sc.Agr. (Syd.), Ph.D. (New Eng.); nitrification in semi-arid soils
J. W. Green, B.Sc. (Adel.), M.Sc. (W.A.); taxonomy of *Dillwynia*; disjunct species in southern Australia
J. B. Williams, B.Sc. (Syd.); ecology, physiology and anatomy of Australian rain forest and sclerophyll plants

3. School of Rural Science

Armidale, 5N. Tel.: Armidale 2231

G. L. McClymont, B.V.Sc., Ph.D., *Head of School*

(a) DEPARTMENT OF AGRONOMY

- J. A. Veale, M.Sc. (N.Z.), Ph.D. (Lond.), D.I.C., *Head of Department and Senior Lecturer*: whole-plant physiology
J. W. McGarity, M.Sc.Agr., Ph.D. (Syd.), *Senior Lecturer in Soil Science*: denitrification
B. R. Watkin, M.Agr.Sc. (N.Z.), Ph.D. (Lond.), *Lecturer*: pasture ecology, palatability

(b) DEPARTMENT OF BIOCHEMISTRY AND NUTRITION

- G. L. McClymont, B.V.Sc., Ph.D., *Professor of Nutrition and Chemical Pathology, and Head of Department*: ruminant metabolism and nutrition; chemical pathology
E. F. Annison, B.Sc., Ph.D. (Lond.), F.R.I.C., *Senior Lecturer in Chemical Pathology*: ruminant metabolism
R. B. Cumming, B.V.Sc., M.R.C.V.S., *Lecturer in Poultry Science*: diseases and nutrition of poultry
D. B. Lindsay, B.Sc., M.A., D.Phil. (Oxon.), *Senior Lecturer in Biochemistry*: ruminant physiology
R. F. Passey, B.Sc.Agr., Ph.D. (McG.), *Senior Lecturer in Biochemistry*: metabolism of helminths
M. Somers, B.Sc.Agr., Ph.D., *Lecturer in Nutrition*: ruminant nutrition

(c) DEPARTMENT OF LIVESTOCK HUSBANDRY

- N. T. M. Yeates, D.Agr.Sc. (Qld.), Ph.D. (Cantab.), *Associate Professor and Head of Department*: reproduction, climatology, and carcass research
M. K. Hill, M.Agr.Sc., *Lecturer in Livestock Husbandry*: growth studies in sheep and cattle
M. L. Ryder, M.Sc. (Leeds), Ph.D., M.I.Biol., *Senior Lecturer*: wool growth

(d) DEPARTMENT OF PHYSIOLOGY

- J. V. Evans, B.Sc. (N.Z.), B.V.Sc. (Syd.), M.R.C.V.S., *Associate Professor and Head of Department*: physiological individuality
M. E. D. Webster, M.Sc. (N.Z.), s.c., *Lecturer in Physiology*: environmental physiology, primarily sheep

COMMONWEALTH OF AUSTRALIA

- V. J. Williams, M.Sc.Agr. (W.A.), *Lecturer in Physiology*: gastro-enterology, primarily sheep
- (i) *Sub-Department of Genetics*
M. R. Patchell, M.Agr.Sc. (N.Z.), *Senior Lecturer in Animal Breeding*: effects of selection in combination with different mating systems
S. K. Stephenson, M.Sc. (N.Z.), Ph.D. (Syd.), *Senior Lecturer*: genetic aspects of growth and wool production
- (ii) *Sub-Department of Microbiology*
J. B. Kwapinski, M.D. (Gd.Danz.), C.Sc. (Wars.), Assoc. Prof. (Wars.), *Senior Lecturer in Microbiology*: immunochemistry
- (iii) *Sub-Department of Preventive Medicine*
M. M. MacKinnon, B.Sc.Vet. (Edin.), M.R.C.V.S., *Lecturer in Pathology and Preventive Medicine*: immunology

D. UNIVERSITY OF NEW SOUTH WALES

Barker Street, Kensington. Tel.: 663 0351

1. School of Biological Sciences

- B. J. Ralph, B.Sc., Ph.D., F.R.A.C.I., *Professor*: biochemistry of wood-destroying fungi
C. K. Goddard, B.Sc.Hons., Ph.D., *Lecturer*: reproduction of molluscs; endocrinology of reptiles
Miss Nola J. Hannon, B.Sc., Ph.D., *Lecturer*: nitrogen economy of natural plant communities
Miss Mary M. Hindmarsh, B.Sc., Ph.D., *Lecturer*: effects of metabolic inhibitors on sub-microscopic structure of cells
A. K. O'Gower, M.Sc., Ph.D., *Lecturer*: marine and mosquito ecology
Miss Aola M. Richards, M.Sc., Ph.D., *Lecturer*: ecology, life history and systematics of cave insects, particularly glow-worms and cave-wetas
H. J. Willets, B.Sc.Hons., M.Sc., *Lecturer*: studies in blue mould *Perenospora tabacina* in tobacco
A. Wood, B.Sc.Agr., *Lecturer*: fungal systematics, particularly of Basidiomycetes; structure and composition of fungal cells with particular reference to the cell wall
A. Woods, M.A., F.R.E.S., M.I.Biol., *Lecturer*: chemical control of pests and diseases of fruit and arable crops in Europe; effect of soil insecticides on population densities of soil fauna

2. School of Wool Technology

- P. R. McMahon, M.Agr.Sc., Ph.D., A.R.I.C., A.T.I., *Professor of Wool Technology, Head of School*: technology of wool production and utilization
G. H. Ford, B.Sc., *Lecturer*: population genetics
C. L. Goldstone, B.Agr.Sc., *Lecturer*: livestock production
J. D. McFarlane, B.Agr.Sc., *Lecturer*: agronomy
W. R. McManus, B.Agr.Sc., Ph.D., *Senior Lecturer*: nutrition and physiology of the sheep
E. M. Roberts, M.Agr.Sc., Ph.D., *Senior Lecturer*: sheep breeding
K. J. Whiteley, B.Sc.Hons., Ph.D., *Lecturer*: biophysics of wool fibres

E. UNIVERSITY OF SYDNEY

1. Department of Agriculture

Sydney. Tel.: 68 0522

- J. R. A. McMillan, D.Sc.Agr., M.S. (Corn.), *Professor of Agriculture and Dean of the Faculty of Agriculture*

COMMONWEALTH OF AUSTRALIA

- (a) AGRICULTURAL CHEMISTRY SECTION
Vacant: *Professor of Agricultural Chemistry*
S. Hacobian, Ph.D., M.Sc., A.R.A.C.I., *Senior Lecturer*
H. H. Bauer, Ph.D., M.Sc., *Lecturer*
- (b) AGRICULTURAL ECONOMICS SECTION
K. O. Campbell, M.A., Ph.D. (Chic.), M.P.A. (Harv.), B.Sc.Agr., *Research Professor of Agricultural Economics*
R. M. Parish, B.Sc.Agr., *Lecturer*
- (c) AGRICULTURAL MICROBIOLOGY SECTION
J. M. Vincent, D.Sc.Agr., Dip.Bact. (Lond.), *Associate Professor of Agricultural Microbiology*
J. S. Bunt, Ph.D., B.Sc.Agr., *Lecturer*
Y. T. Tchan, D.Sc. (Paris), *Senior Lecturer*
- (d) AGRONOMY SECTION
J. R. A. McMillan, D.Sc.Agr., M.S. (Corn.), *Professor of Agriculture*
O. G. Carter, Ph.D. (Corn.), M.S. (Corn.), B.Sc.Agr., *Lecturer*
F. C. Crofts, M.S. (Oregon), B.Sc.Agr., *Senior Lecturer*
D. L. Jackson, B.Sc.Agr., *Lecturer*
- (e) BIOMETRY SECTION
L. N. Balaam, B.Sc. (Q'ld.), *Lecturer*
- (f) GENETICS AND PLANT BREEDING SECTION
I. A. Watson, Ph.D. (Minn.), B.Sc.Agr., *Associate Professor of Genetics and Plant Breeding*
E. P. Baker, Ph.D. (Calif.), B.Sc.Agr., *Senior Lecturer*
- (g) PLANT PATHOLOGY SECTION
N. H. White, D.Sc. (Tas.), M.Sc., *Associate Professor of Plant Pathology*
D. M. Griffin, M.A., Ph.D., (Cantab.), *Senior Lecturer*
- (h) SOIL SCIENCE SECTION
N. Collis-George, Ph.D. (Cantab.), M.Sc. (Manc.), *Associate Professor of Soil Science*
B. G. Davey, Ph.D. (Aberd.), B.Sc.Agr., *Lecturer*
- (i) NORTH-WEST WHEAT RESEARCH INSTITUTE
Narrabri
A wheat growers' organization administered by the University of Sydney.
H. V. Jenkins, B.Sc.Agr. (Syd.), *Director*
N. F. Derera, B.Sc.Agr. (Bud.), *Wheat-breeder*
R. G. Fawcett, B.Sc.Agr. (Adel.), *Wheat Agronomist*
Miss Helen Philpotts, M.Sc.Agr. (Syd.), *Agrostologist*
2. Department of Animal Husbandry
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T. J. Robinson, Ph.D. (Cantab.), M.Sc.Agr., *Professor of Animal Husbandry*
- (a) HEADQUARTERS OF DEPARTMENT
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(i) *Animal Genetics*
J. S. F. Barker, Ph.D., B.Agr.Sc., *Senior Lecturer in Animal Genetics*: population and dairy cattle genetics
Miss Shane Bull, B.Sc.Agr., *Research Assistant*

COMMONWEALTH OF AUSTRALIA

(ii) *Animal Management*

H. G. Belschner, D.V.Sc., *Senior Lecturer in Animal Management*; sheep husbandry and diseases
R. K. Ryan, M.V.Sc., *Lecturer in Animal Management*; rumen physiology

(iii) *Animal Nutrition*

D. M. Walker, Ph.D., M.Sc., N.D.A., *Reader in Animal Nutrition*; ruminant nutrition
K. C. Chou, B.Sc., *Research Student*
G. Faichney, B.Agr.Sc., *Research Student*

(b) ANIMAL HUSBANDRY FARMS

Camden. Tel.: Camden 6 9287

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(i) *Dairy Foundation Research Unit*

W. G. Whittlestone, D.Sc. (N.Z.), A.R.I.C., *Reader in Dairy Husbandry*; lactation physiology; milking machines
D. J. Clarke, B.Agr.Sc., *Technical Officer*
Miss Elizabeth Kernohan, B.Agr.Sc., *Demonstrator*

(ii) *Dairy Production*

Miss Juliet Nield, B.Agr.Sc., *Technical Officer*; dairy production

(iii) *M. C. Franklin Laboratory (Meat Production)*

I. D. Wardrop, Ph.D., B.Agr.Sc. (Meib.), *William McIlrath Fellow and Lecturer in Animal Husbandry*; beef cattle production

(iv) *Poultry Foundation Research Unit*

H. W. McNary, Ph.D., M.S. (Purdue), *Director of Poultry Husbandry*; poultry genetics
Kassim ben Ismail, B.V.Sc., *Research Student*; poultry genetics
F. P. Moss, B.Sc.Eng., Dip.P.Hus. (Syd.)

(v) *Sheep and Wool Research Unit*

D. R. Lindsay, B.Agr.Sc., *Research Student*; physiology of reproduction
S. Salamon, B.Sc.Agr., Ph.D. (Bud.), Cand.Agr. (Moscow), *Research Fellow*; physiology of reproduction

(c) McCaughey Memorial Institute

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J. N. Shelton, B.V.Sc. (Qld.), *McCaughey Memorial Research Fellow*; sheep husbandry; physiology of reproduction

3. Department of Botany

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F. V. Mercer, Ph.D. (Cantab.), *Associate Professor*; plant physiology
G. K. Berrie, B.Sc., Ph.D. (Lond.), *Lecturer*; cytotaxonomy of Hepaticae (liver-worts)
R. C. Carolin, B.Sc., F.L.S., *Lecturer*; taxonomy and morphology; Wahlenbergia, Geraniaceae, Goodeniaceae
A. P. Hughes, M.A., Ph.D. (Cantab.), *Lecturer*; plant growth in relation to the environment; morphogenesis

COMMONWEALTH OF AUSTRALIA

- A. R. H. Martin, M.A., Ph.D. (Cantab.), *Lecturer*: pollen analysis of quaternary sediments; ecology of bogs
I. V. Newman, M.Sc., Ph.D. (Lond.), F.R.C.V.S., F.L.S., *Senior Lecturer*: reproductive morphology of angiosperms, incrustants, history of botany
S. Smith-White, D.Sc.Agr. (Syd.), *Reader*: cytology and genetics

4. Department of Veterinary Medicine

Tel.: 68 0522

- D. McFarlane, B.Sc. (Glas.), M.R.C.V.S., *Professor of Veterinary Medicine and Dean of the Faculty of Veterinary Sciences*: field survey of diseases of cattle and sheep
K. Haughey, B.V.Sc.: growth characteristics of sheep
D. R. Hutchins, B.V.Sc.: preventive medicine
K. Johnston, B.V.Sc.: epidemiology
J. M. Keep, B.V.Sc.: fungal infections of the skin
L. H. Larsen, B.V.Sc., M.S. (Colorado), Ph.D.: experimental surgery; tissue reactions to injury
T. J. McClure, B.V.Sc.: bovine infertility
Miss V. E. Osborne, B.V.Sc.: mare fertility
B. Sinkovic, D.V.M. (Giessen): respiratory diseases in poultry
J. D. Steel, B.V.Sc.: electrocardiography in herbivora
R. M. Webb, B.V.Sc.: anatomy of the sheep
A. Wright, B.Sc., Ph.D. (Liv.): pituitary and adrenal function

5. Department of Veterinary Pathology and Bacteriology

Tel.: 68 0522

- H. R. Carne, D.V.Sc., *Professor of Veterinary Pathology and Bacteriology*: the pathogenesis and immunology of *Corynebacterium ovis*; heritable epithelioma in the sheep
R. V. S. Bain, B.V.Sc., M.Sc., *Senior Lecturer in Veterinary Bacteriology*: immunology of *Pasteurella multocida*
W. E. Lawrence, B.V.Sc., M.R.C.V.S., *Lecturer in Veterinary Pathology and Bacteriology*: pathogenesis and immunology of *Brucella ovis*
L. N. Loomis, D.V.M., M.S. (Mich.), *Senior Lecturer in Veterinary Pathology*: comparative studies on leucæmia

6. Department of Veterinary Physiology

- C. W. Emmens, Ph.D., D.Sc., F.A.A., *Professor*: physiology of reproduction; biometry
I. A. Martin, B.V.Sc., *Research Fellow*: deep-freezing of semen and field trials
L. Martin, B.Sc., Ph.D., *Lecturer*: estimation and mode of action of oestrogens
R. G. Wales, B.V.Sc., Ph.D., *Lecturer*: laboratory studies of semen
I. G. White, B.Sc., Ph.D., *Reader*: biochemistry of semen

7. Department of Zoology

- L. C. Birch, D.Sc. (Adel.), B.Agr.Sc. (Melb.), *Professor of Zoology*: population ecology of animals
W. H. Dawbin, M.Sc. (N.Z.), *Senior Lecturer*: whale biology
B. G. Jamieson, Ph.D. (Brist.), *Senior Tutor-Demonstrator*: earth worms
K. P. Lamb, Ph.D. (Cantab.), *Senior Lecturer*: insect physiology
M. P. Marsh, Ph.D. (Calif.), *Lecturer*: vertebrate populations
A. A. Racek, Dr.rer.nat. (Masaryk, Brno), *Lecturer*: biology of prawns
K. E. W. Salter, B.Sc., *Lecturer*: wasp taxonomy
A. R. Woodhill, D.Sc.Agr., *Reader in Entomology*: mosquito taxonomy

COMMONWEALTH OF AUSTRALIA

F. LINNEAN SOCIETY OF NEW SOUTH WALES

Science House, 157 Gloucester Street, Sydney. Tel.: 27 1627

W. J. Peacock, B.Sc., *Linnean Macleay Fellow*: botany, cytological conditions in the Goodeniaceae, and study of basic chromosome sub-structure using irradiation and similar techniques

G. AUSTRALIAN MUSEUM

(Established 1846)

College Street, Sydney. Tel.: BM 6954

Concerned essentially with taxonomic zoology and with geology and anthropology.

J. W. Evans, M.A., Sc.D., D.Sc., *Director*
H. O. Fletcher, M.Sc., *Deputy Director*: palaeontology
R. O. Chalmers, A.S.T.C., *Curator of Rocks and Minerals*
H. G. Cogger, M.Sc., *Assistant Curator of Reptiles and Amphibians*
H. J. de S. Disney, M.A., *Curator of Birds*
D. K. McAlpine, M.Sc., *Assistant Curator of Insects*
F. D. McCarthy, Dip.Anthrop., *Curator of Anthropology*
D. F. McMichael, M.A., Ph.D., *Curator of Molluscs*
B. J. Marlow, B.Sc., *Curator of Mammals*
Miss E. C. Pope, M.Sc., *Curator of Worms and Echinoderms*
C. N. Smithers, M.Sc., *Curator of Insects*
G. P. Whitley, F.R.Z.S., *Curator of Fishes*
J. C. Yaldwyn, Ph.D., *Curator of Crustacea and Coelenterates*

H. MUSEUM OF APPLIED ARTS AND SCIENCES

Harris Street, Broadway, Sydney. Tel.: 21 4535

J. L. Willis, M.Sc., *Director*: botany of Australian essential oil flora
H. H. G. McKern, M.Sc., *Deputy Director*: chemistry of Australian essential oils

1. Botanical Section

B. E. J. Small, B.Sc.For., M.Sc., *Research Officer*: physiological aspects of essential oil-bearing *Eucalyptus* spp.

2. Chemistry Section

R. O. Hellyer, M.Sc., *Senior Chemist*: chemistry of Australian essential oils
W. J. Franklin, B.Sc., *Chemist*: chemistry of Australian essential oils

QUEENSLAND

A. DEPARTMENT OF AGRICULTURE AND STOCK

William Street, Brisbane. Tel.: 32 0401. 'Grams: Agriculture, Brisbane

W. A. T. Summerville, D.Sc., *Director-General of Agriculture and Stock*

W. Webster, B.V.Sc., *Deputy Director-General*

P. B. McGovern, M.A., B.Sc., *Senior Biometrician*

1. Division of Animal Industry

(a) DIVISIONAL HEADQUARTERS

William Street, Brisbane. Tel.: 32 0401

A. L. Clay, B.V.Sc., *Director, Division of Animal Industry*

C. R. Mulhearn, B.V.Sc., *Assistant Director, Division of Animal Industry*

O. H. Brooks, B.V.Sc., *Assistant to Director, Division of Animal Industry*

COMMONWEALTH OF AUSTRALIA

(b) ANIMAL HUSBANDRY RESEARCH BRANCH

Animal Research Institute, Fairfield Road, Yeerongpilly, Brisbane. Tel.: 48 5151

- J. W. Ryley, B.V.Sc., *Director of Cattle Husbandry Research*: ruminant nutritional studies
R. M. Beames, B.Agr.Sc., *Husbandry Officer*: porcine nutritional studies
J. Edmunds, B.Agr.Sc., *Husbandry Officer*: artificial insemination
C. P. McPhee, B.Agr.Sc., *Husbandry Officer*: genetics and animal behaviour
J. C. Morris, Ph.D., B.V.Sc., *Husbandry Officer*: ruminant nutritional studies
E. F. Singleton, B.V.Sc., *Husbandry Officer*: artificial insemination

(c) BIOCHEMICAL BRANCH

Animal Research Institute, Fairfield Road, Yeerongpilly, Brisbane. Tel.: 48 5151

- J. M. Harvey, D.Sc., F.R.A.C.I., *Biochemist*: trace element deficiencies and excesses
G. R. Baxter, B.Sc., *Chemist*: clinical techniques determination of blood constituents
R. J. W. Gartner, B.Sc., A.R.A.C.I., *Senior Chemist (Clinical Biochemistry)*: biochemical changes associated with clinical disorders of livestock
I. S. Hurwood, B.Sc., A.R.A.C.I., *Chemist*: poisons in livestock, insecticidal residues in livestock
M. S. Levitt, B.Sc., *Chemist*: grass and crop silages
C. W. R. McCray, B.Sc., A.R.A.C.I., *Senior Toxicologist*: poison plants, toxicity heavy metals, acaricides
T. McEwan, M.Sc., A.R.A.C.I., *Chemist*: toxic principle in some poison plants, acaricides
K. W. Moir, B.Sc., A.R.A.C.I., *Senior Chemist (Nutritional Biochemistry)*: fodder evaluation, nutrition of grazing animals
P. B. Oelrichs, B.Sc., A.R.A.C.I., *Chemist*: toxic principles in some poison plants
E. Payne, B.Sc., *Chemist*: ruminant metabolism

(d) CATTLE HUSBANDRY BRANCH

William Street, Brisbane. Tel.: 32 0401

- D. N. Sutherland, B.V.Sc., *Director of Cattle Husbandry*
J. G. Young, B.Sc.Agr., *Senior Husbandry Officer*: dairy cattle nutrition
G. I. Alexander, Ph.D., M.Sc., B.V.Sc., *Senior Husbandry Officer*: growth rate and carcass studies
N. C. E. Barr, B.V.Sc., *Husbandry Officer*: infertility studies dairy cattle
Atherton
L. E. Donaldson, B.V.Sc., *Husbandry Officer*: beef cattle fertility studies
Ayr, Cattle Field Station
P. N. Thurbon, B.Agr.Sc., *Husbandry Officer*: nutritional studies
Gayndah, "Brian Pastures", Pasture Research Station
A. W. Plasto, B.Agr.Sc., *Husbandry Officer*: reproductive studies beef cattle

(e) PATHOLOGY BRANCH

Animal Research Institute, Fairfield Road, Yeerongpilly, Brisbane. Tel.: 48 5151

- L. G. Newton, B.V.Sc., *Director, Pathology Branch*: virus diseases
W. T. K. Hall, B.V.Sc., *Chief Veterinary Pathologist*: diseases of cattle
I. D. Baynes, B.V.Sc., *Veterinary Officer*: diseases of pigs
L. L. Callow, B.V.Sc., *Senior Protozoologist*: tick fevers of cattle
M. C. Connole, B.Sc., *Bacteriologist*: fungal diseases of animals

COMMONWEALTH OF AUSTRALIA

- Miss J. K. Elder, B.Sc., *Bacteriologist*: bacteriology of animal diseases
Mrs. C. K. Granzien, B.Sc., *Bacteriologist*: hematology
L. Laws, B.V.Sc., *Senior Veterinary Pathologist*: melioidosis, diseases of sheep
C. G. Ludford, B.Sc., *Senior Serologist*: serology of cattle and sheep diseases
M. D. McGavin, B.V.Sc., *Senior Histopathologist*: histopathology of nervous diseases of animals
P. J. O'Sullivan, B.Sc.Agr., *Senior Parasitologist*: tick fever of cattle; sheep blowfly control
G. C. Simmonds, B.Sc., *Senior Bacteriologist*: ovine brucellosis, leptospirosis
R. E. Teakle, B.Sc., *Serologist*: toxoplasmosis
R. Winks, B.V.Sc., *Veterinary Officer*: leptospirosis
Oonoomba, Animal Health Station
L. Tammemagi, B.V.Sc., Dr.Med.Vet., *Officer-in-Charge*: tick fever, immunity in cattle, plant poisoning
D. Griffiths, B.Sc., *Parasitologist*: coccidiosis
L. A. Y. Johnston, B.V.Sc., *Veterinary Officer*: tick fever and plant poisoning in cattle

(f) PIG AND POULTRY BRANCH

William Street, Brisbane. Tel.: 32 0401

- Vacant: *Director, Pig and Poultry Branch*
F. Bostock, H.D.A., *Senior Husbandry Officer (Pigs)*: pig nutrition
F. N. J. Milne, B.Sc., *Senior Husbandry Officer (Poultry)*: poultry nutrition
A. C. E. Todd, B.Sc.Agr., *Husbandry Officer*: nutrition and housing of pigs

(g) SHEEP AND WOOL BRANCH

William Street, Brisbane. Tel.: 32 0401

- A. T. Bell, B.V.Sc., *Director of Sheep Husbandry*: sheep fertility
M. D. Richards, Dip.Ind.Chem., *Asst. Wool Technologist*: wool wax content
Cunnamulla
J. Gibb, B.V.Sc., *Husbandry Officer*: drought feeding
Longreach
K. E. Wells, B.V.Sc., *Husbandry Officer*: sheep fertility

(h) VETERINARY SERVICES BRANCH

William Street, Brisbane. Tel.: 32 0401

- C. R. Mulhearn, B.V.Sc., *Director of Veterinary Services*: cattle tick; bovine contagious pleuropneumonia
K. M. Grant, B.V.Sc., *Asst. Director of Veterinary Services*: infertility of cattle; diseases of dairy cattle
P. H. McCarthy, B.V.Sc., *Veterinary Officer*: diseases dairy cattle
B. Parkinson, B.V.Sc., *Chief Inspector of Slaughter-houses*: meat technology
P. D. Ranby, B.V.Sc., *Divisional Veterinary Officer (Poultry Diseases)*: poultry diseases
R. S. Stranger, B.V.Sc., *Veterinary Officer*: diseases cattle and pigs
Atherton
J. Lamberth, B.V.Sc., *Veterinary Officer*: diseases of dairy cattle
Barcaldine
E. R. Johnson, B.V.Sc., *Veterinary Officer*: diseases sheep and beef cattle
Biloela
G. Leatch, B.V.Sc., *Veterinary Officer*: diseases dairy cattle and pigs
Cairns
D. W. Lavers, B.V.Sc., *Divisional Veterinary Officer*: diseases dairy cattle

COMMONWEALTH OF AUSTRALIA

Kingaroy

K. B. Hale, B.V.Sc., *Veterinary Officer*: tick control; diseases of cattle

Maryborough

R. Rogers, B.V.Sc., *Veterinary Officer*: diseases dairy cattle and pigs

M. S. Stevens, B.V.Sc., *Divisional Veterinary Officer*: diseases dairy cattle and pigs

Rockhampton

S. G. Knott, *Divisional Veterinary Officer*: cattle tick control; diseases cattle

Roma

D. J. Webster, B.V.Sc., *Divisional Veterinary Officer*: diseases beef cattle and sheep

Toowoomba

B. A. Woolcock, B.V.Sc., *Divisional Veterinary Officer*: cattle tick control; infertility in cattle

Townsville

D. B. Copeman, B.V.Sc., *Veterinary Officer*: diseases cattle and sheep

C. P. Craven, B.V.Sc., *Divisional Veterinary Officer*: diseases cattle and sheep

2. Division of Dairying

(a) DIVISIONAL HEADQUARTERS

William Street, Brisbane. Tel.: 32 0401

E. B. Rice, Dip.Ind.Chem., M.I.Biol., *Director of Dairying*

(b) DAIRY RESEARCH BRANCH

William Street, Brisbane. Tel.: 32 0401

L. E. Nichols, B.Sc.Agr., A.R.A.C.I., *Director of Research*

J. D. Armitt, Q.D.D.M., *Experimentalist*: dairy technology

Miss C. M. Barnett, B.Sc., *Chemist*: biochemistry and antibiotics in dairy products

C. Churchill, B.Sc., *Chemist*: chemistry of dairy products and farm and dairy factory water supplies

G. G. Crittall, Dip.Ind.Chem., A.R.A.C.I., *Chemist*: chemistry of butter and butterfat spreads

W. Dommett, B.Sc., *Bacteriologist*: bacteriology of dairy products

M. B. Ferricks, B.Sc., A.R.A.C.I., *Chemist*: chemistry of dairy products

F. G. Few, B.Sc., B.Sc.App., *Dairy Technologist*: chemical engineering

Miss A. J. Gillies, M.App.Sc., *Bacteriologist*: bacteriology of cheese and cheese starters

Miss L. G. Lightbody, M.Sc., *Bacteriologist*: bacteriology of butter

Miss P. C. Loane, B.Sc., *Dairy Technologist*: bacteriology of milk

W. C. T. Major, B.Agr.Sc., A.S.B.M., *Dairy Technologist*: dairy bacteriology and technology

R. J. Park, Dip.Ind.Chem., B.Sc., A.R.A.C.I., *Chemist*: dairy chemistry

K. Scott, B.Sc., *Bacteriologist*: cheese ripening

W. F. Schubert, B.A., B.Sc., Dip.Ed., *Senior Chemist*: chemistry

Malanda

V. C. Tucker, Dip.Ind.Chem., A.R.A.C.I., *Chemist*: chemistry of dairy products

Toowoomba

Miss L. Jackson, B.Agr.Sc., *Chemist*: chemistry of cheese

Miss A. Larcher, B.Sc., *Dairy Technologist*: bacteriology of cheese

T. A. Morris, B.Sc.Agr., *Senior Dairy Technologist*: cheese technology

COMMONWEALTH OF AUSTRALIA

- (c) FIELD SERVICES BRANCH
William Street, Brisbane. Tel.: 32 0401
V. R. Smythe, M.Sc.Agr., Q.D.A., *Director of Field Services*
C. Clark, B.Agr.Sc., *Technologist*: surveys of herd production, recording data and sire surveying
W. D. Mitchell, B.Sc.Agr., *Senior Dairy Technologist*: butter technology
S. E. Pegg, Q.D.A., *Chief Adviser, Herd Recording*: surveys of herd recording data

3. Division of Marketing

- (a) DIVISIONAL HEADQUARTERS
William Street, Brisbane. Tel.: 32 0401
H. S. Hunter, *Director of Marketing*
A. A. Ross, Q.D.A., M.Sc.Agr., *Assistant Director of Marketing*
- (b) ECONOMICS RESEARCH BRANCH
William Street, Brisbane. Tel.: 32 0401
C. H. P. Defries, H.D.A., B.Com., *Director of Economic Services*
E. O. Burns, B.Com., A.C.A.A., A.A.S.A., *Senior Agricultural Economist*
S. S. Douinany, B.Agr.Sc., *Agricultural Economist*
A. L. O'Neil, B.Com., A.A.U.Q. (Prov.), *Agricultural Economist*
H. I. Toft, B.Com., *Agricultural Economist*
- (c) MARKETING BRANCH
D. P. Lapidge, B.Com., A.A.U.Q., *Senior Marketing Officer*
K. C. Guyatt, B.Com., A.A.U.Q., A.A.S.A., A.C.I.S., *Marketing Officer*
N. H. Hall, B.Com., A.A.U.Q., *Marketing Officer*
D. R. Lewis, B.Sc.Econ., *Marketing Officer*
R. V. Riley, B.Com., A.A.U.Q., *Marketing Officer*
- (d) STANDARDS BRANCH
A. C. Peel, Dip.Ind.Chem., A.R.A.C.I., *Standards Officer*
A. Hegarty, Q.D.A., *Assistant Standards Officer*

4. Division of Plant Industry

- (a) DIVISIONAL HEADQUARTERS
William Street, Brisbane. Tel.: 32 0401
W. J. S. Sloan, M.Agr.Sc., *Director, Division of Plant Industry*
A. W. S. May, M.Agr.Sc., Ph.D., *Assistant to Director*
- (b) AGRICULTURAL CHEMICAL LABORATORY BRANCH
William Street, Brisbane. Tel.: 32 0401
W. J. Cartmill, B.Sc., A.R.A.C.I., *Director, Agricultural Chemical Laboratory Branch*
W. R. Winks, B.Sc., A.R.A.C.I., *Assistant Director, Agricultural Chemical Laboratory Branch*: pesticides and pesticide residues
R. P. Bowden, B.Sc., *Chemist, Plant Nutrition Section*: tobacco soils
N. G. Cassidy, M.Sc., F.R.A.C.I., *Senior Chemist, Plant Nutrition Section*: pasture soils
E. Chippendale, M.Agr.Sc., *Officer-in-Charge, Plant Nutrition Section*: soil-plant relations; tobacco leaf quality
B. J. Crack, B.Sc., M.S., *Soils Technologist*: tobacco soils; soil salinity
R. E. Cullinane, B.Agr.Sc., *Soil Physicist*: solonetzic soil studies
H. Hassler, B.Sc., *Senior Soils Technologist*: soil surveys and land use

COMMONWEALTH OF AUSTRALIA

W. T. Kelso, B.Sc., A.R.A.C.I., *Chief Chemist, General Analytical Section*: instrumentation isotope applications; pesticide residues
M. J. Price, Dip.Ind.Chem., A.R.A.C.I., *Chemist, General Analytical Section*: oil seeds
A. R. Robinson, A.R.A.C.I., *Chemist, General Analytical Section*: carbohydrates in pasture species
C. E. Rose, Dip.Ind.Chem.Eng., A.R.A.C.I., *Chemist*: nutritional disorders in linseed
L. A. Warrell, B.Sc., *Soils Technologist*: soil fertility; methods

Atherton

C. L. van Wijk, M.Agr.Sc., *Soil Survey Officer*: soil survey and land use

Mareeba

A. D. Johnson, B.Sc., *Soils Technologist*: tobacco and pasture soils

Northgate

H. T. Green, D.I.C., B.Sc., A.R.A.C.I., *Chemist*: tobacco chemical research (plant and soil)

(c) AGRICULTURE BRANCH

William Street, Brisbane. Tel.: 32 0401

L. G. Miles, B.Agr.Sc., Ph.D. (Corn.), *Director of Agriculture*
S. Marriott, B.Agr.Sc., *Assistant Director of Agriculture*
G. H. Allen, Q.D.A., *Senior Agronomist*: general agronomy
G. J. Cassidy, Q.D.A., B.Agr.Sc., *Agrostologist*: dairy pasture improvement
A. S. Greasley, B.Sc., *Agronomist*: irrigation of crops and pastures
J. L. Groom, B.Agr.Sc., *Senior Agronomist*: general agronomy
J. Harbison, B.Sc., *Agronomist*: general agronomy
C. H. Middleton, Q.D.A., B.Agr.Sc., *Agrostologist*: dairy pasture improvement
V. J. Wagner, B.Agr.Sc., *Chief Agronomist*: general agronomy, weed control, irrigation
A. Winterton, Q.D.H., B.Sc., *Agronomist*: tobacco
C. G. Wragge, D.F.H. (Lond.), *Agricultural Engineer*: farm machinery

Atherton

A. J. Gartner, B.Agr.Sc., *Agrostologist*: dairy pasture on basaltic tablelands
I. F. Martin, B.Sc., *Plant Breeder*: maize breeding in wet tropics

Blackall

D. L. Purcell, B.Agr.Sc., *Agrostologist*: sheep pastures in semi-arid zone

Biloela, Regional Experiment Station

B. Grof, B.Agr.Sc., *Agrostologist*: pasture species, selection and evaluation
K. G. Trudgian, B.Sc., *Agronomist*: cotton
V. K. F. Wienert, B.Agr.Sc.: *Agronomist*: cotton

Bundaberg

J. C. Dean, Q.D.A., B.Agr.Sc., *Agronomist*: tobacco
N. F. Fox, B.Agr.Sc., *Special Agrostologist*: beef cattle pastures

Cairns

D. O. Atherton, Q.D.A., M.Agr.Sc., *Director of Tropical Agriculture*: tropical agriculture
F. C. Sweeney, B.Agr.Sc., *Agrostologist*: tropical pastures

Cloncurry

D. I. Sillar, B.Agr.Sc., *Agrostologist*: dry tropical pastures

Cooroy

P. E. Luck, B.Agr.Sc., *Agrostologist*: dairy pastures

COMMONWEALTH OF AUSTRALIA

Emerald

W. J. Bisset, Q.D.A., B.Agr.Sc., *Agrostologist*: semi-arid zone pastures

Gatton

T. Dickson, B.Sc., *Agronomist*: irrigated lucerne, maize

C. J. Lather, B.Agr.Sc., *Agronomist*: irrigated crops

C. A. Schroder, Q.D.A., *Assistant Irrigationist*: irrigated pastures; potatoes

Gayndah, "Brian Pastures", Pasture Research Station

L. R. Humphreys, B.Agr.Sc., *Chief Agrostologist*: beef cattle pastures

W. J. Scateni, B.Agr.Sc., *Agrostologist*: beef cattle pastures

N. D. Young, B.Agr.Sc., *Agrostologist*: beef cattle pastures

Hermitage, Regional Experiment Station

R. L. Harty, B.Sc., *Agronomist*: agronomy cereal crops

D. Rosser, B.Agr.Sc., *Senior Plant Breeder*: winter cereals

Inglewood, Tobacco Experiment Station

D. A. K. McNee, B.Agr.Sc., *Agronomist*: tobacco

B. A. T. Rodda, B.Agr.Sc., *Agronomist*: tobacco

Julia Creek, "Toorak" Field Station

E. J. Weston, B.Agr.Sc., *Agrostologist*: dry tropical pastures

Kairi, Regional Experiment Station

S. J. Barker, B.Agr.Sc., *Agronomist*: maize and silage

G. W. Kyncur, B.Agr.Sc., *Agronomist*: fertility of laterals

P. G. Tow, B.Sc., *Agronomist*: legume nutrition; pasture management

Kingaroy

D. R. Bailey, B.Agr.Sc., *Agronomist*: weed control

J. A. Kerr, Q.D.A., *Plant Breeder*: sorghum, cowpea, soybean

J. E. Rawson, B.Sc., *Agronomist*: weed control

Mareeba

R. W. Downes, M.Agr.Sc., Ph.D. (Corn), *Plant Breeder*: pasture species

G. Gibson, B.Agr.Sc., *Agronomist*: tobacco

G. D. Keefer, B.Sc., *Agronomist*: irrigation

Millaroo, Regional Experiment Station

C. A. Muir, B.Agr.Sc., *Agronomist*: soil fertility, agronomy in dry tropics

Parada, Tobacco Experiment Station

D. K. Ward, B.Agr.Sc., *Agronomist*: tobacco

Rockhampton

T. G. Graham, Q.D.A., *Agrostologist*: beef cattle pastures

South Johnstone, Bureau of Tropical Agriculture

J. H. Saint-Smith, Q.D.A., Q.D.H., B.Sc.Agr., *Agronomist*: high rainfall tropical pastures

Toowoomba

O. W. Duncan, B.Agr.Sc., *Agronomist*: winter cereals

J. K. Leslie, B.Agr.Sc., *Agrostologist*: pasture establishment in black soils

B. O'Shea, B.Agr.Sc., *Plant Physiologist*: linseed and winter cereals

Warwick

G. R. Lee, B.Agr.Sc., *Agrostologist*: beef and sheep pastures

J. W. Little, B.Agr.Sc., *Agronomist*: grain crops; wheat quality

J. Marley, B.Agr.Sc., *Agronomist*: grain crops

R. F. Moore, B.Agr.Sc., *Plant Breeder*: hybrid sorghums

I. Romano, B.Agr.Sc., *Plant Breeder*: winter cereals

COMMONWEALTH OF AUSTRALIA

(d) FOOD PRESERVATION RESEARCH BRANCH

Harbour Road, Hamilton, Brisbane. Tel.: 68 2421

S. A. Trout, M.Sc., Ph.D., F.R.A.C.I., *Director and Biochemist*

Miss B. L. Banditt, B.Agr.Sc., *Physiologist*: cold storage of citrus and grapes

J. R. Blake, B.Sc., *Physiologist*: cold storage and transport of bananas

B. F. Bradley, D.I.C., A.R.A.C.I., *Food Technologist*: processing of fruits

D. W. Connell, B.Sc., *Chemist*: fruit flavours

Miss J. H. Coulter, B.Sc., *Bacteriologist*: fungal wastage in stored fruits

T. Hope, B.Sc., *Chemist*: fruit quality

R. E. Leverington, D.I.C., A.R.A.C.I., *Food Technologist*: processing of fruit juices

M. D. Littmann, B.Sc., *Physiologist*: cold storage of pineapples

B. C. Peacock, B.Sc., *Chemist*: storage disorders

Miss M. M. Spurgin, B.Sc., *Bacteriologist*: bacterial wastage in stored foods

C. D. Stevenson, D.I.C., A.R.A.C.I., *Physiologist*: cold storage and transport of apples and pears

J. B. Watkins, B.Sc., *Physiologist*: storage and ripening of stone fruits, papaws and tomatoes

D. Winterton, D.I.C., A.R.A.C.I., *Food Technologist*: processing of vegetables

(e) HORTICULTURE BRANCH

William Street, Brisbane. Tel.: 32 0401

J. H. Smith, M.Sc., N.D.A., *Director of Horticulture*

R. C. Cannon, B.Agr.Sc., *Assistant Director of Horticulture*

H. M. Groszmann, B.Agr.Sc., *Senior Plant Breeder*: beans; tomatoes

Cairns

S. E. Stephens, *Horticulturist*: tropical fruits

Maryborough

W. V. Mungomery, B.Agr.Sc., *Horticulturist*: citrus; avocado; nuts

Nambour

R. F. Black, B.Sc., Ph.D., *Chief Plant Physiologist*: pineapples

F. W. Berrill, B.Sc., *Senior Horticulturist (Plantation Crops)*: pineapple; papaw

N. A. Cornwall, B.Agr.Sc., *Plant Physiologist*: pineapple

W. B. Hogarth, B.Sc., *Horticulturist*: propagation methods; papaw; pineapple
A. R. Mitchell, B.Agr.Sc., *Horticulturist*: chemical weedicides; horticultural
agronomy

Ormiston, Redlands Horticultural Research Station

K. M. Ward, M.Agr.Sc., *Chief Horticulturist (Vegetable Crops)*: nutrition

I. A. Bonner, B.Agr.Sc., *Plant Breeder*: strawberry; tomato

B. W. Cull, Q.D.A., B.Agr.Sc., *Horticulturist*: soil structure and water relations

N. S. Kruger, B.Sc., *Plant Physiologist*: nutrition in vegetables

R. C. Menary, B.Sc., M.S. (Calif.), *Plant Physiologist*: nutrition in vegetables

Stanthorpe

B. C. Dodd, B.Agr.Sc., *Horticulturist*: deciduous fruits; nutrition and crop control

R. B. Morwood, M.Sc., *Senior Horticulturist*: deciduous fruits, nutrition

(f) SCIENCES BRANCHES

(i) BOTANY

Botanic Museum and Herbarium, Botanic Gardens, Brisbane. Tel.: 32 0401

S. L. Everist, B.Sc., *Government Botanist*: economic botany; inland pastures;
poisonous plants, weed control

S. T. Blake, D.Sc., *Research Botanist*: systematics of grasses, sedges and eucalypts

Miss D. M. Ellis, B.Agr.Sc., *Botanist*: weed control

COMMONWEALTH OF AUSTRALIA

R. W. Johnson, B.Sc., *Botanist*: systematic botany; weed control
H. E. Kleinschmidt, B.Sc., *Botanist*: systematic botany; weed control
Miss J. C. Morrow, B.Sc., *Botanist*: systematic botany
L. Pedley, B.Sc., *Botanist*: systematic botany (wattles); weed control
L. S. Smith, B.Sc., *Research Botanist*: taxonomy and ecology of rain-forest trees
Miss J. E. Tey, B.Sc., *Botanist*: systematic botany

(ii) ENTOMOLOGY

William Street, Brisbane. Tel.: 32 0401

W. A. McDougall, D.Sc., *Government Entomologist*
A. R. Brimblecombe, M.Sc., Ph.D., *Senior Entomologist*: pests of timber;
systematics; general economic entomology
R. B. Champ, B.Agr.Sc., Ph.D., D.I.C., *Research Entomologist*: insecticides;
storage pests
R. C. Colbran, M.Agr.Sc., *Research Entomologist*: nematology
Mrs. R. P. Kleinschmidt, M.Agr.Sc., *Entomologist*: systematics; identification
service
J. H. D. Martin, B.Sc., *Entomologist*: general entomology
Miss M. A. Permiakoff, B.Sc., *Entomologist*: insect identification service

Atherton

G. W. Saunders, B.Agr.Sc., *Entomologist*: pests of tobacco; tropical entomology

Ayr

J. J. Davis, B.Sc., *Entomologist*: pests of tobacco; tropical entomology

Nambour

H. G. Greening, B.Agr.Sc., *Entomologist*: pests of small crops

W. A. Smith, B.Sc., *Research Entomologist*: pests of tobacco and horticultural
crops

Rockhampton

T. Passlow, M.Agr.Sc., *Research Entomologist*: pests of cotton and other field
crops

B. N. E. Sabine, B.Sc., *Entomologist*: pests of cotton and other field crops

Stanhope

M. Bengston, B.Sc., *Entomologist*: pests of deciduous fruits

Townsville

H. J. Lavery, B.Sc., *Entomologist*: fauna research; general entomology

Warwick

T. H. Kirkpatrick, B.Sc., *Entomologist*: fauna research; general entomology

(iii) PLANT PATHOLOGY

William Street, Brisbane. Tel.: 32 0401

B. L. Oxenham, B.Agr.Sc., *Government Plant Pathologist*: diseases of citrus,
pineapples and forest trees
O. J. Burden, B.Sc. (Lond.), *Pathologist*: mushroom culture; diseases of grapes
and vegetables
A. Diatloff, B.Sc., *Pathologist*: legume bacteriology
J. C. Johnson, M.Sc., *Research Pathologist*: disease resistance in vegetables
Miss M. M. Kennedy, B.Sc., *Plant Pathologist*: legume bacteriology
Miss M. L. Moffett, B.Sc., *Plant Pathologist*: bacterial plant diseases
J. H. Simmonds, M.B.E., M.Sc., *Research Pathologist*: diseases of tropical fruits
Miss B. L. Winks, B.Sc., *Pathologist*: mycology

Cairns

W. Pont, B.Sc., *Research Pathologist*: diseases of tobacco, tropical crops and
forest trees

COMMONWEALTH OF AUSTRALIA

Kingaroy
G. S. Purss, M.Agr.Sc., *Research Pathologist*: diseases of peanuts, cowpeas and lucerne

Nambour
G. J. P. McCarthy, B.Agr.Sc., *Pathologist*: diseases of citrus, beans and tobacco
D. S. Teakle, B.Agr.Sc., *Pathologist*: root rots and virus diseases

Stanthorpe
K. N. Shea, B.Sc., *Pathologist*: diseases of deciduous fruits

Toowoomba
R. S. Greber, *Assistant Plant Pathologist*: virus diseases
I. K. Hughes, B.Sc., *Pathologist*: diseases of potatoes, onions and field crops
T. McKnight, M.Sc., *Senior Pathologist*: diseases of wheat, barley and sorghum

- (g) **SOIL CONSERVATION BRANCH**
William Street, Brisbane. Tel.: 32 0401
J. E. Ladewig, Q.D.A., B.Agr.Sc., *Director*, *Soil Conservation Branch*
J. Rosser, Q.D.A., B.Agr.Sc., *Senior Soil Conservationist*: technical aspects of soil conservation
Toowoomba
A. F. Skinner, Q.D.A., *Senior Soil Conservationist*: soil conservation planning and design
G. L. Swartz, B.Agr.Sc., *Soil Conservationist*: soil conservation research

B. BUREAU OF SUGAR EXPERIMENT STATIONS

Head Office: 99 Gregory Terrace, Brisbane, B.19. Tel.: 2 2031. 'Grams: Sugarcureau, Brisbane

1. Administration

N. J. King, *Director*
L. G. Vallance, M.Sc., *Assistant Director*
R. W. Mungomery, *Assistant to Director*

2. Division of Cane Breeding

Meringa, via Gordonvale

J. H. Buzacott, M.Sc., *Senior Plant Breeder*: cane breeding, varietal selection
J. C. Skinner, B.Sc.Agr., Ph.D., *Senior Geneticist*: cane breeding; genetics

3. Division of Entomology and Pathology

Brisbane

C. G. Hughes, B.Sc.Agr., *Senior Pathologist*: diseases of sugarcane
D. R. L. Stcindl, B.Sc.Agr., *Senior Pathologist*: diseases of sugarcane
O. W. Sturgess, M.Agr.Sc., *Research Pathologist*: disease of sugarcane

Meringa, via Gordonvale

G. Wilson, B.Sc., *Senior Entomologist*: insect pests of sugarcane
B. T. Egan, B.Sc., *Pathologist*: diseases of sugarcane in North Queensland
B. E. Hitchcock, B.Agr.Sc., *Entomologist*: insect pests of sugarcane, soil microfauna

4. Division of Soils and Agronomy

Brisbane

H. E. Young, D.Agr.Sc., *Senior Physiologist*: nematodes, weeds, physiology of sugarcane
K. C. Leverington, B.Sc., *Research Chemist*: soil and plant growth

COMMONWEALTH OF AUSTRALIA

Ayr

J. Wessdorp, M.Sc., *Assistant Agronomist*: agronomy, irrigation

Bundaberg

R. B. Moller, B.Agr.Sc., *Agronomist*: agronomy of sugarcane

Mackay

G. C. Bieske, B.Sc., *Research Chemist*: soil and plant growth

Meringa, via Cordonvale

A. G. Barric, B.Agr.Sc., *Agronomist*: agronomy of sugarcane

C. DEPARTMENT OF FORESTRY

108 George Street, Brisbane. (P.O. Box 37, North Quay, Brisbane.) Tel.: 2 2133. 'Grams: Forestry, Brisbane

V. Grenning, M.Sc.For., *Conservator*

A. R. Trist, M.F. (Yale), B.Sc., Dip.For., *Deputy Conservator*

1. Forest Products Research Branch

S. G. Jennings, Dip.For., *Officer-in-Charge*

K. V. Cokley, B.Sc., A.R.A.C.I., *Research Officer*: wood chemistry and preservation

N. S. Hinson, B.Sc.For., *Research Forester*

L. F. Horton, B.Sc., *Biometrist*

C. J. J. Watson, *Investigations Officer*: timber utilization

2. Silvicultural Section

Brisbane

C. Haley, Dip.For., *Senior Research Officer*: Queensland trees and *Pinus* species
N. B. Henry, B.Sc.For., Dip.For., *Research Forester*: hardwoods, arboricides, weedcides

Atherton

H. E. Volk, B.Sc.For., Dip.For., *Silvicultural Research Officer*: tropical rain forests, North Queensland

Beerwah

D. G. Nikles, B.Sc.For., Dip.For., *Forester*: tree breeding (*P. elliottii*, *P. radiata*, *P. caribaea*, hoop and kauri pine)

B. N. Richards, B.Sc.For., Dip.For., *Forester*: nutrition of *P. taeda*, *P. elliottii*, and hoop pine

G. B. Wood, B.Sc.For., Dip.For., *Forester*: exotic conifers (*P. taeda*, *P. elliottii*, etc.)

Dalby

P. J. Hawkins, B.Sc.For., Dip.For., *Forester*: cypress pine, western hardwoods and shade trees

Yarraman

M. A. Cameron, Dip.For., *Forester*: hoop pine and associated species

D. DEPARTMENT OF PUBLIC INSTRUCTION

Queensland Agricultural College

Lawes. Tel.: Gatton 1

N. W. Briton, B.V.Sc., *Principal*: animal nutrition

1. DIVISION OF ANIMAL HUSBANDRY

H. G. Sundstrom, B.V.Sc., *Senior Lecturer*: animal breeding

T. Searle, B.Sc., Q.D.A.H., *Lecturer*: animal biochemistry

F. R. Staunton, B.V.Sc., *Lecturer*: animal health

COMMONWEALTH OF AUSTRALIA

2. DIVISION OF PLANT INDUSTRY

- P. W. Grogan, B.Sc.Agr., *Senior Lecturer*: hybrid maize
J. C. Galletly, B.Sc.Agr., Q.D.A., *Lecturer*: water-nitrogen inter-relationships
F. H. Kleinschmidt, M.Sc.Agr., Q.D.A., *Lecturer*: changes in botanical components of pastures
L. Rule, B.Sc.Agr., Q.D.H., *Lecturer*: citrus
R. J. Talbot, B.Sc.Agr., Q.D.H., *Lecturer*: irrigation water quality

3. DAIRY SCIENCE

- F. G. Kieseker, B.Sc.Agr., Q.D.A., Q.D.D., *Lecturer*: butter washing techniques, butter spreadability and cheese manufacturing
K. Faulkner, B.Sc., *Assistant Lecturer*: butter washing techniques, butter spreadability and cheese manufacturing

E. DEPARTMENT OF PUBLIC LANDS

Biological Section, Sherwood Laboratory

Sherwood, Brisbane. Tel.: 79 1321

- A. P. Dodd, M.B.E., *Director*: biological and chemical control of weeds
G. Diatloff, B.Sc.Agr., *Assistant Investigation Officer*: biological and chemical control of weeds
W. H. Haseler, B.Sc., *Assistant Investigation Officer*: biological and chemical control of weeds
J. Mann, *Investigation Officer*: biological and chemical control of weeds

F. UNIVERSITY OF QUEENSLAND

1. Department of Agriculture

Mill Road, St. Lucia, Brisbane. Tel.: 7 2021

- L. J. H. Teakle, B.Sc.Agr., M.S., Ph.D., A.R.A.C.I., *Professor of Agriculture*: soil classification and fertility
W. E. Fox, B.Sc., *Lecturer in Agriculture*: soil physics
J. de R. Hughes, B.Sc., A.R.A.C.I., *Lecturer in Agriculture*: soil phosphate relations
W. O. McCarthy, M.Agr.Sc., Ph.D., *Senior Lecturer in Agriculture*: agricultural economics
P. J. Skerman, B.A., D.Agr.Sc., Q.D.D., *Reader in Agriculture*: agronomy; land utilization
Mrs. J. Tully, B.Sc.Hons., Ph.D., *Senior Lecturer in Agriculture*: agricultural extension
S. A. Waring, B.Sc.Agr., *Lecturer in Agriculture*: soil fertility
H. L. Wood, M.Sc., Ph.D., A.R.A.C.I., *Senior Lecturer in Agriculture*: plant biochemistry

2. Department of Animal Husbandry

Mill Road, St. Lucia, Brisbane. Tel.: 7 2021

- E. A. Campbell, Ph.D. (Cantab.), B.Sc. (Edin.), M.A. (Cantab.), M.R.C.V.S., *Acting Professor of Animal Husbandry*: mineral metabolism, energy metabolism
G. R. Fallon, B.V.Sc. (Q'ld.): hormone assay in ruminants
G. McBride, Ph.D. (Edin.), M.Agr.Sc. (Q'ld.): genetics; animal behaviour
W. J. Pryor, B.V.Sc. (Syd.): copper metabolism in sheep; animal nutrition
J. A. Springhall, M.B.E., B.V.Sc. (Syd.): poultry nutrition

3. Department of Botany

Old University Buildings, George Street, Brisbane. Tel.: 2 2501

- D. A. Herbert, D.Sc., *Professor*: rain forest ecology; plant geography

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J. E. C. Aberdeen, M.Agr.Sc., Ph.D., *Senior Lecturer*: soil populations; Agaricaceae

B. A. Barlow, B.Sc., Ph.D., *Lecturer*: cytogenetics

H. C. Clifford, M.Sc., Ph.D., *Lecturer*: experimental taxonomy

A. B. Cribl, M.Sc., Ph.D., *Lecturer*: algology; forest botany

R. F. N. Langdon, M.Agr.Sc., Ph.D., *Reader*: mycology

D. Priest, B.Sc., Ph.D., D.I.C., *Lecturer*: plant anatomy, Agaricaceae

G. L. Wilson, B.Agr.Sc., D.Phil., *Senior Lecturer*: water relations

4. Department of Entomology

Old University Buildings, George Street, Brisbane. Tel.: 2 2501

F. A. Perkins, B.Sc.Agr., *Reader-in-Charge*: systematics of Plecoptera and Diptera

J. Bryan, B.Sc., *Teaching Fellow*: biology of Culicidae

E. M. Exley, M.Sc., *Lecturer*: biology and systematics of Formicidae and Isoptera

K. Korboot, B.Sc., *Teaching Fellow*: biology of Trichoptera

E. N. Marks, M.Sc., Ph.D., *Senior Research Fellow*: biology and systematics of Culicidae

F. J. D. McDonald, B.Sc., *Demonstrator*: biology of Pentatomidae

L. A. Powell, B.Sc., *Teaching Fellow*: biology of Lampyridae

P. R. Webb: systematics and biology of Mygalomorphae

T. E. Woodward, M.Sc., Ph.D., *Senior Lecturer*: ecology and systematics of Hemiptera

5. Department of Microbiology

Herston N. 9. Tel.: 5 4673

V. B. D. Skerman, B.Agr.Sc., D.Sc., *Reader and Head of Department*

W. J. Halliday, B.Sc., Ph.D., *Senior Lecturer*: immunology—Q. fever in sheep

G. W. Skyring, B.Sc., *Lecturer*: soil microbiology; inorganic nitrogen transformation

6. Department of Parasitology

Mill Road, St. Lucia, Brisbane. Tel.: 7 2021. 'Grams: Parasitology, University, Brisbane

J. F. A. Sprent, D.Sc., Ph.D., F.R.C.V.S., *Professor of Parasitology and Head of Department*: life history of the ascaridoid nematodes

C. Dobson, B.Sc., Ph.D., *Senior Research Fellow in Experimental Parasitology*: effects of hormonal balance on the worm populations of sheep

H. M. D. Hoyte, B.Sc., Ph.D., *Lecturer in Protozoology*: blood protozoa of cattle

J. C. Pearson, B.A., M.A., Ph.D., *Senior Lecturer in Helminthology*: digenetic trematodes of native animals

7. Department of Physiology

Cnr William and Alice Streets, Brisbane. Tel.: 2 2501

O. E. Budtz-Olsen, M.B., C.I.B., M.D., *Professor of General Physiology*

A. W. Blackshaw, D.V.Sc., *Senior Lecturer in Physiology*

R. B. Cross, B.Sc., Ph.D., M.B., B.S., *Senior Lecturer in Physiology*

C. C. Kratzing, B.Sc.Hons., M.Sc., Ph.D., *Senior Lecturer in Physiology*

8. Veterinary School

Mill Road, St. Lucia, Brisbane. Tel.: 7 2021

(a) DEPARTMENT OF PREVENTIVE MEDICINE

J. Francis, D.Sc., M.Sc.Vet.Sc., F.R.C.V.S., *Professor of Preventive Medicine*: tuberculosis and adaptation of cattle to tropical conditions

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- A. Frost, B.V.Sc.: treatment and control of mastitis
D. Little, B.V.Sc.: economic loss caused by ticks and the relationship of skin and coat characters to the growth of cattle in the tropics
Mrs. J. R. Olds, B.Sc.Hons.: blood-groups in cattle
R. J. Olds, B.V.Sc., Dip.Bact., Ph.D.: microbiology with special reference to air-borne infections and the reliability of the tuberculin test
A. A. Seawright, B.V.Sc., B.Sc.: biochemical pathology and toxicology
H. Winter, Dr.Med.Vet.: anaemia and bone-marrow regeneration
- (b) SUB-DEPARTMENT OF ANATOMY
N. D. S. May, M.Sc., Q.D.S., *Senior Lecturer*: investigations on the vascular system of the head and neck of the sheep
R. M. Butterfield, B.V.Sc., R.D.A.: comparative anatomy of British and Brahman cattle
R. Tucker, D.V.M., B.V.Sc.: salivary gland development
J. W. Watson, B.V.Sc., Q.D.A.H.: studies of the reproductive tract in relation to artificial insemination
9. Department of Zoology
Mill Road, St. Lucia, Brisbane. Tel.: 7 2021
A. K. Lee, M.A., Ph.D. (Calif.): biology of the cane toad *Bufo marinus* and its role in pollution of stock water
D. Stenhouse, M.A., B.Sc. (N.Z.): ecology and behaviour of Grallinidae and Fringillidae (Aves)

G. QUEENSLAND MUSEUM

Gregory Terrace, Brisbane
Concerned mainly with zoology, geology and anthropology.
G. Mack, B.Sc., *Director*: vertebrate zoology; taxonomy

SOUTH AUSTRALIA

A. DEPARTMENT OF AGRICULTURE

Agriculture Building, Gawler Place, Adelaide. Tel.: 8 0266
A. G. Strickland, C.B.E., M.Agr.Sc., F.A.I.A.S., *Director of Agriculture*

1. Agricultural Economics
A. A. Dawson, Ph.D. (Aberd.), M.Sc. (Corn.), B.Sc.Agr., *Agricultural Economist*: farm management
2. Animal Industry Division
M. R. Irving, B.V.Sc., H.D.A., *Chief of Division*
- (a) ANIMAL HEALTH BRANCH
W. S. Smith, B.V.Sc., *Chief Inspector of Stock*
J. T. Fearn, B.V.Sc., *Senior Veterinary Research Officer*: diseases of sheep and cattle
W. K. Rose, M.R.C.V.S., *Senior Veterinary Officer*: infertility and artificial breeding of dairy cattle
J. H. Bray, B.V.Sc., R.D.A., *Veterinary Officer*: genetics and nutrition of poultry
I. D. Cameron-Stephen, M.R.C.V.S., *Veterinary Officer*: diseases of pigs
M. E. Dodson, B.V.Sc., *Veterinary Officer*
J. H. Duffy, B.V.Sc., R.D.A., *Veterinary Officer*

COMMONWEALTH OF AUSTRALIA

(b) ANIMAL HUSBANDRY BRANCH

- H. V. Chamberlain, B.V.Sc., R.D.A., *Chief Adviser in Animal Husbandry*
C. J. Mulhearn, B.V.Sc., *Senior Research Officer in Animal Production*: nutrition of sheep
W. J. Wilkie, B.V.Sc., *Senior Adviser in Animal Production*: sheep and cattle husbandry
J. C. Potter, B.Agr.Sc., *Senior Research Officer (Wool Production)*
A. A. McArdle, *Senior Poultry Adviser*
C. S. Bungay, B.Ru.Sc., *Adviser in Animal Production*: sheep husbandry
R. M. Carrall, B.Agr.Sc., *Adviser in Animal Production*: beef cattle husbandry
J. M. Lobban, B.Sc. (Rand.), *Pig Husbandry Adviser*

(c) DAIRY BRANCH

- A. G. Itzertott, M.Agr.Sc., *Chief Dairy Adviser*
G. E. Durney, M.A. (N.Z.), *Research Officer*: production recording
G. S. Pickhaver, H.D.D., *Milk Products Adviser*: dairy technology

3. Division of Plant Industry

A. J. K. Walker, B.Agr.Sc., R.D.A., *Chief of Division*

(a) AGRICULTURE BRANCH

- N. S. Tiver, M.Sc., B.Agr.Sc.Hons., *Chief Agricultural Adviser*
P. M. Barrow, B.Agr.Sc., *Senior Research Officer (Agronomy)*
J. B. Doolittle, B.Agr.Sc., *Barley Agronomist*
R. J. Banyer, B.Sc., R.D.A., *Research Officer*: annual pastures
P. R. Birks, M.Agr.Sc., *Research Officer*: insect pests of pastures, cereals and other field crops
E. J. Crawford, R.D.A., *Project Officer*: plant introduction
B. J. T. Graham, R.D.A., *Bushfire Protection Adviser*: land use for bushfire protection
T. G. Heard, B.Agr.Sc., *Research Officer*: wheat agronomy
E. D. Higgs, B.Agr.Sc., *Agronomist*: subterranean clover variety studies
P. Judd, B.Sc.Agr.Hons. (Lond.), *Irrigation Research Officer*
G. E. Lines, B.Agr.Sc., *Agricultural Liaison Officer*: pastures
M. J. Mathison, B.Agr.Sc., *Research Officer*: oat agronomy
M. A. Ross, B.Agr.Sc. (Hons.), *Research Officer (Weeds)*
C. L. Watson, B.Agr.Sc., *Research Officer*: drainage and irrigation

(h) HORTICULTURE BRANCH

- T. C. Miller, B.Sc.Agr., *Chief Horticulturist*
M. B. Spurling, M.Agr.Sc., *Senior Horticultural Research Officer*
E. W. Boehm, B.Sc.Agr., *Research Officer*: viticulture
J. R. Botham, B.Agr.Sc., H.D.A., *Research Officer*: citrus
J. A. E. Cooke, B.Agr.Sc., *Research Officer*: citrus packing, handling and transport
H. D. Fedderson, Dip.Agr. (Schleswig), *Project Officer*: potatoes
T. L. Fenner, B.Agr.Sc., *Research Officer*: mites and insect pests
Miss J. F. M. Fry, B.Sc., *Research Officer*: seedling identification of weeds
J. V. Jacobsen, B.Agr.Sc., *Research Officer*: deciduous fruits
V. K. Lohmeyer, B.Agr.Sc., *Agricultural Botanist*: codling moth control and fruit fly eradication
W. B. McGlasson, B.Agr.Sc., *Research Officer*: fruit storage
W. J. Moller, B.Agr.Sc.Hons., *Research Officer*: fruit and vegetable diseases
I. S. Rogers, B.Agr.Sc., *Research Officer*: vegetables
D. H. Simons, B.Agr.Sc.Hons., *Research Officer*: fruit thinning and development
M. R. Till, B.Agr.Sc., *Research Officer*: irrigation

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(c) SOIL CONSERVATION BRANCH

- J. A. Beare, B.Agr.Sc., *Soil Conservator*
R. J. French, B.Agr.Sc., R.D.A., *Senior Research Officer (Soil Conservation)*: tillage, soil moisture, soil structure
J. S. Russell, Ph.D., M.Sc. (Nebraska), B.Agr.Sc., *Senior Research Officer (Soil Fertility)*,
A. L. Clarke, B.Agr.Sc., *Soil Conservation Adviser*: soil structure
J. A. Edwards, B.Sc. (Lond.), *Soil Conservation Engineer*
W. E. Matheson, B.Agr.Sc., *Soil Conservation Adviser*: ecology and land use
R. C. Shearer, B.Agr.Sc., *Soil Conservation Officer*: soil-water relations

4. Research Centres

BERRI EXPERIMENTAL ORCHARD, Berri. Tel.: Berri 15
W. B. Harris, B.Agr.Sc., *Manager*

BLACKWOOD EXPERIMENTAL ORCHARD, Blackwood. Tel.: 78 1033
R. W. I. Cowley, R.D.A., *Manager*

KANGAROO ISLAND RESEARCH CENTRE, Parndana. Tel.: Parndana East 234
H. R. Day, R.D.A., *Officer-in-Charge*
P. M. Wigg, B.Agr.Sc., *Research Officer*: pastures

KYBYBOLITE RESEARCH CENTRE, Kybybolite. Tel.: Kybybolite 2
P. E. Geytenbeek, B.Agr.Sc., *Officer-in-Charge*
P. S. Cocks, B.Agr.Sc., *Research Officer (Agronomy)*
I. C. Fletcher, B.Agr.Sc., *Research Officer (Animal Husbandry)*

MINNIPA RESEARCH CENTRE, Minnipa. Tel.: Minnipa 31D
D. B. Winn, R.D.A., *Acting Officer-in-Charge*

STATE VITICULTURAL STATION, Nuriootpa. Tel.: Nuriootpa 83
H. W. Tulloch, R.D.A., R.D.Oen., *Manager*

TURRETFIELD RESEARCH CENTRE, Rosedale. Tel.: Rosedale 7
J. R. Goode, B.Agr.Sc.Hons., *Officer-in-Charge*

WANBI RESEARCH CENTRE, Wanbi. Tel.: Wanbi 11
P. D. Guerin, R.D.A., *Officer-in-Charge*

B. WOODS AND FORESTS DEPARTMENT

Government Offices, Adelaide. (Box 25, Rundle Street, P.O., Adelaide.)
Tel.: W 0461. 'Grams: Woodforest, Adclaide

- B. H. Bednall, B.Sc., *Conservator of Forests and Head of Department*
J. Thomas, B.Sc., Dip.For., *Assistant Conservator of Forests*: silviculture; management
R. Boardman, M.Sc.: management
C. D. Boomstra, M.Sc., Dip.For.: silviculture
D. R. Douglas, B.Sc., Dip.For.: fire protection
J. H. Harding, B.Sc., *Research Officer*: soils; tree nutrition; fertilizers; biometrics
V. M. Healy, B.Sc., Dip.For.: silviculture; management
A. Keeves, B.Sc., Dip.For. (Oxon.), Dip.For. (Canb.): management
N. B. Lewis, B.Sc., Dip.For.: forest management

C. UNIVERSITY OF ADELAIDE

1. Waite Agricultural Research Institute
Private Mail Bag, G.P.O., Adelaide. Tel.: 79 1691. 'Grams: Waitinst, Adelaide
J. Melville, Ph.D., *Director*

COMMONWEALTH OF AUSTRALIA

(a) DEPARTMENT OF AGRICULTURAL CHEMISTRY

- R. K. Morton, B.Sc.Agr., Ph.D., F.A.A., *Waite Professor of Agricultural Chemistry*: enzyme biochemistry; biochemistry of cell growth
M. R. Atkinson, B.Sc., Ph.D.: chemistry of nucleic acids and of enzymes
R. J. Best, D.Sc.: chemistry of plant viruses; plant biochemistry
I. R. Falconer, B.Sc., Ph.D.: endocrinology; animal physiology
H. P. C. Gallus, M.Sc.: general chemistry
Miss Janet Graham, B.Sc., Ph.D.: protein biosynthesis; radiochemistry
D. J. Greenland, B.Sc., Ph.D.: soil chemistry; clay-organic matter interactions
A. C. Jennings, B.Sc.: analytical chemistry
D. G. Lewis, M.Sc.: soil fertility
H. R. Lovelock: organic synthesis
Miss Adele Millerd, B.Sc., Ph.D.: plant biochemistry; nitrogen fixation
A. M. Posner, B.Sc., Ph.D.: physico-chemical studies of clays
J. P. Quirk, B.Sc.Agr., Ph.D.: physico-chemical studies of clay minerals

(b) DEPARTMENT OF AGRONOMY

- C. M. Donald, M.Agr.Sc., F.A.I.A.S., *Waite Professor of Agriculture*: pasture agronomy; plant competition
W. G. Allden, M.A., M.Agr.Sc.: animal production
K. P. J. Barley, M.Agr.Sc.: soil-plant relationships
J. N. Black, M.A., D.Phil.: crop physiology; pasture plants
J. A. Carpenter, M.Sc.Agr.: pasture plants; dormancy
E. D. Carter, B.Agr.Sc.: pasture management
G. C. Everitt, M.Sc.: pasture utilization; animal production
K. W. Finlay, B.Sc.Agr., Ph.D.: cereal plant breeding
R. Knight, B.Sc., Dip.Agr.Sc., Dip.Trop.Agr.: pasture plant breeding
R. J. Millington, M.Sc., Ph.D.: pasture-soil relationships
K. Moore, B.Sc.: wheat breeding
J. K. Powrie, B.Sc.Agr., M.Sc.: pasture nutrition studies
K. W. Shepherd, B.Agr.Sc.: cereal genetics
J. H. Silsbury, M.Sc.Agr.: species and strain studies; pasture plants
D. H. B. Sparrow, B.Sc.: barley breeding
D. E. Symon, B.Agr.Sc.: systematic botany

(c) DEPARTMENT OF ENTOMOLOGY

- K. M. Doull, M.Agr.Sc.: apiculture; pollination studies
B. Johnson, B.Sc.Agr., Ph.D.: physiology and behaviour of aphids
H. S. F. Lower, M.Sc.: biological control
D. A. Maelzer, Ph.D.: ecology; polymorphism
P. W. Miles, M.Sc., Ph.D.: secretion and chemistry of hemipterous saliva
J. M. Monro, Ph.D.: fruit-fly studies
F. D. Morgan, M.Sc., Ph.D.: ecology of forest insects
D. J. Taylor, B.Sc., Dip.Agr.Sc., Dip.Trop.Agr.: ecology of lucerne insects

(d) DEPARTMENT OF PLANT PATHOLOGY

- N. T. Flentje, M.Sc., Ph.D.; *Reader in Plant Pathology*: physiology of parasitism
M. V. Carter, M.Agr.Sc.: airborne diseases
B. G. Clark, B.Sc.: fungal physiology
N. C. Crowley, B.Sc.Agr., M.Sc., Ph.D.: virus diseases of stone fruits
J. M. Fisher, B.Sc.Agr.: nematodes
R. I. B. Francki, M.Sc., Ph.D.: plant viruses
A. Kerr, B.Sc., Ph.D.: pathogenic soil fungi
P. H. B. Talbot, M.Sc., Ph.D.: systematic mycology
O. Vaartaja, Ph.D.: forest pathology
J. H. Warcup, M.Sc., Ph.D.: soil microbiology; legume inoculation

COMMONWEALTH OF AUSTRALIA

(e) DEPARTMENT OF PLANT PHYSIOLOGY

- L. H. May, B.Sc., Ph.D., D.I.C.: *Reader and Head of Department*: carbohydrate transformations in plants; effects of water stress
D. Aspinall, Ph.D.: physiology of the barley plant
M. S. Buttrose, B.Agr.Sc., M.Sc., Dr.sc.nat.: starch granules in wheat endosperms
B. G. Coombe, M.Agr.Sc., Ph.D.: physiology of fruit development
G. R. Edwards, B.Agr.Sc., M.Sc.: bud initiation and development in fruit trees
N. G. Marinos, B.A., M.Sc., Ph.D.: dormancy; submicroscopic morphology
L. Paleg, B.A., M.Sc., Ph.D.: hormonal control of plant growth and development

(f) FARM DEPARTMENT

K. A. Pike, R.D.A., *Manager*

2. Botany School

North Terrace, Adelaide. Tel.: 8 3211

- R. N. Robertson, B.Sc., Ph.D., F.A.A., F.R.S., *Professor of Botany*: plant physiology
P. F. Brownell, Ph.D., *Senior Research Fellow*: plant ecology
Miss C. M. Eardley, M.Sc., *Lecturer*: plant taxonomy
R. T. Lange, Ph.D., *Lecturer*: plant ecology; microbiology
J. P. R. Riches, Ph.D., *Senior Lecturer*: plant physiology
H. B. S. Womersley, Ph.D., D.Sc., *Reader*: marine algae

3. Department of Genetics

North Terrace, Adelaide. Tel.: 8 3211

- J. H. Bennett, M.A., B.Sc., Ph.D., *Head of Department*: genetics and biometry
D. L. Haymen, B.Agr.Sc.Hons., Ph.D.: cytogenetics; incompatibility in flowering plants
G. M. E. Mayo, B.Agr.Sc.Hons., Ph.D.: host-pathogen relationship; biometrical genetics
Mrs. M. J. Mayo, M.Sc., Ph.D.: recombination in *Neurospora*

4. Department of Zoology

North Terrace, Adelaide. Tel.: 8 3211

- W. P. Rogers, D.Sc., *Professor of Zoology*: physiology of parasites
H. G. Andrewartha, D.Sc., *Reader in Animal Ecology*: ecology of insects
L. M. Angel, M.Sc.: life of trematodes
T. O. Browning, Ph.D.: ecology of insect pests of citrus
D. A. Duckhouse, Ph.D.: ecology of mites and insect pests of fruit trees
P. E. Madge, Ph.D.: ecology of insect pests of pastures
G. B. Sharman, D.Sc.: physiology of reproduction
P. M. Thomas, M.Sc.: taxonomy of nematode parasites of animals

D. THE INSTITUTE OF MEDICAL AND VETERINARY SCIENCE

Frome Road, Adelaide. Tel.: 8 1111

- J. Orde Poynton, C.M.G., M.A., M.D., B.Chir., M.R.C.S., L.R.C.P., *Director*
J. A. W. Banks, M.Sc., B.V.Sc., *Veterinary Pathologist*
K. H. Clapp, M.Sc., *Research Officer*
I. Hreczko, *Graduate Assistant*
Mrs. E. A. Irving, M.Sc., *Biochemist*
A. Korthals, *Graduate Assistant*

COMMONWEALTH OF AUSTRALIA

R. Rac, D.V.M. (Zagreb), *Veterinary Pathologist*
Miss J. B. Symonds, B.Sc., *Graduate Assistant*
P. S. Watts, Ph.D., B.Sc., Dip.Bact., F.R.C.V.S., *Senior Veterinary Pathologist*

E. ROSEWORTHY AGRICULTURAL COLLEGE

Roseworthy, South Australia. Tel. Roseworthy 2 and 28.

K. J. Hutchinson, M.Sc.Agr., *Acting Principal*: sheep nutrition and breeding
M. V. Burton, B.Agr.Sc.: agronomy
A. D. Carey, B.Rur.Sc.: sheep nutrition and fleece measurement
B. J. F. Christie, Ph.D., B.Sc.Hons.: organic chemistry of agricultural plants and products
G. T. French, B.V.Sc.: blood physiology in the pig
G. J. Hollamby, B.Agr.Sc.: cereal breeding
M. R. Krause, B.Agr.Sc., R.D.A.: cereal breeding
R. H. Kuehel, B.Sc.Hons., R.D.Oen.: oenology
K. B. Leske, B.Agr.Sc.: rural economics
E. T. Mann, B.E., F.S.A.S.M., A.M.I.E. (Aust.), A.R.A.C.I.: farm engineering
M. W. O'Halloran, M.Sc.: biochemistry and rumen microbiology

F. SOUTH AUSTRALIAN MUSEUM

North Terrace, Adelaide. Tel. 8 3381

N. B. Tindale, B.Sc., *Acting Director*: grassland and forest Lepidoptera, especially Hepialids
P. F. Aitken, M.Sc., M.I.Biol., *Assistant Curator of Insects*: systematics micro-Hymenoptera and bat flies
J. B. Cleland, C.B.E., M.D., Ch.M.: systematics of weeds; Australian flora
H. T. Condon, *Curator of Birds*: biology and systematics of birds
B. C. Cotton, F.R.Z.S., *Curator of Molluscs*: biology and systematics of molluscs
G. F. Gross, M.Sc., F.R.E.S., *Curator of Insects*: systematics and biology of Hemiptera
H. M. Hale, O.B.E.: systematics of whales
F. J. Mitchell, *Curator of Reptiles*: systematics and biology of reptiles and amphibians
T. D. Scott, M.Sc., *Curator of Fishes*: systematics of fish
R. V. Southcott, M.D., B.S., D.T.M. & H.: systematics and biology of mites
H. Womersley, A.L.S. (*hon. cause*), F.R.E.S.: systematics of mites

TASMANIA

A. DEPARTMENT OF AGRICULTURE

Box 192B, G.P.O., Hobart. Tel.: Hobart 2 7441

F. W. Hicks, I.S.O., II.D.A., *Director of Agriculture*: direction of departmental activities

1. Agronomy Division

E. F. Fricke, M.Agr.Sc., Dip.Agr., *Chief Agronomist*
W. M. Blacklow, B.Agr.Sc., *Agronomist*: weeds
M. J. Fisher, B.Agr.Sc., *Agronomist*: pasture research
J. C. Flinn, B.Agr.Sc., *Agronomist*: weeds
P. J. Fountain, B.Sc.Agr., *Senior Agronomist*: potato research
C. A. Lamp, B.Agr.Sc., *Agronomist*: forage crops
G. J. Martin, B.Agr.Sc., *Agronomist*: pasture species

COMMONWEALTH OF AUSTRALIA

- D. F. Paton, B.Agr.Sc., *Senior Agronomist*: pasture problems and soil deficiencies
R. A. Scott, Ph.D., B.Sc., H.D.A., *Senior Agronomist*: weeds and seeds research
J. G. Stephens, B.Sc.Hons., *Agronomist*: potato breeding
J. C. Tilt, *Senior Agronomist*: cereal and pulse crops
I. M. W. Wood, B.Sc., B.Agr.Sc., *Agronomist*: quality in peas

2. Animal Health Service

- G. K. Meldrum, B.V.Sc., *Chief Veterinary Officer*: administration of Animal Health Service
R. J. Green, B.V.Sc., *Deputy Chief Veterinary Officer*: assists in administration of Animal Health Service; trace elements; animal nutrition and epidemiology
T. M. Alexander, M.R.C.V.S., *Veterinary Pathologist*: direction of work Veterinary Laboratory; animal nutrition and pathology
S. Bennett, B.V.Sc., *Senior Veterinary Officer*: epidemiology, particularly cattle
A. Corbould, B.Sc.Agr., *Bacteriologist*: veterinary bacteriology
S. J. King, B.V.Sc., *Veterinary Pathologist*: animal pathology
J. D. McConnell, B.V.Sc., *Veterinary Specialist Officer*: epidemiology, particularly brucellosis and ovine footrot
B. L. Munday, B.V.Sc., *Veterinary Pathologist*: animal pathology
D. B. Pillinger, B.V.Sc., H.D.A., *Senior Veterinary Officer*: epidemiology, sheep
D. Roche, B.V.Sc., *Veterinary Specialist Officer*: animal nutrition; beef cattle husbandry
A. F. Ryan, B.V.Sc., *Veterinary Parasitologist*: local problems of parasitology
F. B. Ryan, B.V.Sc., *Veterinary Officer*: bovine infertility
R. I. Thain, M.R.C.V.S., *Veterinary Specialist Officer*: bovine infertility

3. Dairy Division

- J. McLaren, H.D.D., *Chief Dairy Officer*
B. A. Pike, B.Agr.Sc., *Dairy Bacteriologist*: bacteriological investigation of milk and milk products; chemical investigation seasonal variation in composition of milk
H. V. Rees, B.Sc.Agr., *Senior Bacteriologist*: bacteriological investigation of milk and milk products; chemical investigation seasonal variation in composition of milk

4. Entomology Division

- L. W. Miller, M.Agr.Sc., F.R.E.S., *Chief Entomologist*: orchard pests, general entomology
E. J. Martyn, M.Sc.Agr., *Senior Entomologist*: pasture pests, army worms, aphids
N. M. Hudson, B.Sc., *Entomologist*: woolly aphid, biological control, scale insects

5. Horticultural Division

- W. F. Walker, N.D.Hort.Eng., *Chief Horticulturist*: organization of horticultural research on fruit, vegetable crops and hops
T. D. Raphael, M.A., Dip.Hort. (Cantab.), *Senior Horticulturist (Research)*: fruit and vegetable crops, processing
B. D. Frappell, B.Agr.Sc., *Horticulturist*: vegetable crops
C. R. Geard, B.Agr.Sc., *Horticulturist*: hop propagation and production
J. C. Laughlin, B.Agr.Sc., *Horticulturist*: irrigation and soil management for pome fruits and vegetables
J. B. O'Loughlin, B.Agr.Sc., *Horticulturist*: propagation; pruning; rootstocks for fruit trees; fruit storage and transport
R. R. Richards, B.Agr.Sc., *Horticulturist*: nutrition pome and stone fruits, glasshouse crops
B. D. Richardson, B.Agr.Sc., *Horticulturist*, Manager, Huon Horticultural Research Station: pome fruits

COMMONWEALTH OF AUSTRALIA

6. Pigs

- V. J. Fagan, H.D.A., *Senior Piggery Officer*: breeding performance, nutrition and environment of pigs
F. A. Frangou, D.A., *Piggery Officer*: Experimental Supervisor, Cressy Research Farm

7. Plant Pathology Division

- G. C. Wade, D.Sc., M.Agr.Sc., *Chief Plant Pathologist*: administration; brown rot of apricots; general plant pathology
I. D. Gcard, M.Agr.Sc., *Plant Pathologist*: diseases of field crops; virus diseases of berry fruits
G. R. Johnstone, B.Agr.Sc., *Plant Pathologist*: virus diseases apples, pears, hops
P. J. Sampson, B.Agr.Sc., *Plant Pathologist*: potato diseases
B. Thistlethwaite, B.Agr.Sc., *Plant Pathologist*: nematode diseases plants

8. Sheep and Wool

- B. C. Jefferies, B.Agr.Sc., R.D.A., *Senior Sheep and Wool Officer*: hybrid grazing management; time of shearing; seasonal wool growth

B. TASMANIAN FORESTRY COMMISSION

12 Murray Street, Hobart. Tel.: Hobart 2 6514

A. H. Crane, B.Sc., Dip.For., M.F., *Chief Commissioner*

1. Management Branch

- P. T. Unwin, Dip.For., *Management Officer*: general management
P. R. Lawrence, M.A., *Senior Research Officer*: management, mensuration
R. G. Gardner, B.For., Dip.For., *Working Plans Officer*: management

2. Maydena Research Station

- K. W. Cremer, B.Sc.For., Dip.For., *Assistant Forester*: eucalypt silviculture and management

3. Silvicultural Branch

- J. M. Gilbert, Ph.D., B.For., Dip.For., *Silviculturist*: silviculture—eucalypt ecology
T. M. Cunningham, Ph.D., B.Sc., B.For., Dip.For., *Senior Research Officer*: eucalypt silviculture
M. P. Coutts, B.Sc.For., *Assistant Forester*: plantation silviculture
R. C. Ellis, B.Sc.For., M.Sc.For., *Assistant Forester*: eucalypt silviculture
J. N. Parker, B.Sc.For., M.F., *Forester*: farm forestry and shelter research

C. UNIVERSITY OF TASMANIA

Box 252 C, G.P.O., Hobart. Tel.: 2 7741

1. Botany Department

- H. N. Barber, M.A. (Cantab.), Ph.D. (Lond.), *Professor of Botany*: genetics of natural selection; physiological genetics
R. K. Crowden, B.Sc. (Tas.), Ph.D. (N.S.W.), *Lecturer*: metabolism of aromatic compounds
Miss W. M. Curtis, M.Sc., Ph.D. (Lond.), *Reader in Botany*: flowering plants of Tasmania
W. D. Jackson, B.Sc., Ph.D. (Tas.), *Lecturer*: radiation biology; experimental taxonomy
J. A. Townrow, M.A., Ph.D. (Cantab.), *Lecturer*: palaeobotany

COMMONWEALTH OF AUSTRALIA

2. Chemistry Department

- J. B. Polya, Dip.Ing.Chem., D.Sc.Tech., D.Sc., *Associate Professor*: chemistry of Tasmanian and Victorian hops
I. R. C. Bick, B.A., M.Sc., Ph.D., *Reader in Chemistry*: chemistry of Tasmanian and Victorian hops; phytochemical survey of Tasmanian flora

D. TASMANIAN MUSEUM

Box 1166M, G.P.O., Hobart. Tel.: 2 6038

- W. Bryden, Ph.D., *Director*: vertebrate zoology and history of science in Tasmania
D. Alexander: studies in ornithology
R. A. Both, B.Sc., *Geologist*: mineralogy
P. J. Cunningham, *Entomologist*: specializing in Lepidoptera
Miss J. Thompson, B.Sc.: invertebrate zoology - studies in ecology of ants

VICTORIA

A. DEPARTMENT OF AGRICULTURE

Treasury Gardens, Melbourne, C.2. Tel.: 63 0321

1. Administrative Division

- F. M. Read, M.Agr.Sc., *Director of Agriculture*
W. B. Miller, M.Agr.Sc., *Deputy Director of Agriculture*
B. F. McKeon, B.Agr.Sc., *Senior Technical Executive Officer*
R. Jardine, B.Agr.Sc., Dip.Math.Stat. (Cantab.), *Biometrician*

(a) BIOLOGY BRANCH

- S. Fish, M.Agr.Sc., *Chief Biologist*: Head of Branch
C. R. Millikan, M.Agr.Sc., D.Sc., *Deputy Chief Biologist*: nutritional diseases and general plant pathology
R. D. Anderson, B.Agr.Sc., *Senior Plant Pathologist*: virus diseases of potatoes; serology
L. D. Crawford, B.Sc., *Entomologist*: biological control of insects
S. Erlich, B.Agr.Sc., *Entomologist*: insect pests of pastures
Miss Eileen E. Fisher, M.Sc., Ph.D. (Cantab.), *Senior Plant Pathologist*: facial eczema and mycology
H. Freeman, B.Agr.Sc., *Plant Pathologist*: general plant pathology
B. C. Hanger, B.Agr.Sc., *Assistant Plant Pathologist*: nutritional disorders of plants
D. E. Harrison, M.Agr.Sc., *Senior Plant Pathologist*: potato and onion diseases other than virus
T. W. Hogan, M.Agr.Sc., *Principal Entomologist*: insect physiology
P. T. Jenkins, B.Agr.Sc., *Senior Plant Pathologist*: fruit diseases; new fungicides
C. J. R. Johnston, B.Agr.Sc., *Senior Entomologist*: citrus insect pests; general entomology
L. C. Jones, B.Agr.Sc., *Plant Pathologist*: cereal diseases and rhizobia
A. W. Kellock, B.Agr.Sc., *Agricultural Scientist*: mycology; facial eczema
J. W. Meagher, B.Agr.Sc., *Senior Plant Pathologist*: nematology
D. S. Morris, B.Agr.Sc., *Senior Entomologist*: stone and pome fruit insect pests
G. T. O'Loughlin, B.Agr.Sc., M.Sc., *Senior Entomologist*: virus vectors
R. G. Paddick, B.Agr.Sc., *Plant Pathologist*: tobacco diseases
H. A. J. Pittman, B.Sc.Agr., B.A., Dip.Ed., *Senior Plant Pathologist*: general plant pathology and rhizobia
R. D. Price, B.Agr.Sc., *Assistant Plant Pathologist*: cereal diseases
C. Reinganum, B.Sc., *Agricultural Scientist*: brown rot of stone fruits

COMMONWEALTH OF AUSTRALIA

- P. G. B. Shelden, B.Agr.Sc., *Entomologist*: insect pests of summer fodder crops and vegetables
P. R. Smith, B.Agr.Sc., *Plant Pathologist*: diseases of vegetables crops
L. L. Stuhbs, M.Agr.Sc., *Senior Plant Pathologist*: virus diseases of fruits and vegetables
R. H. Taylor, M.Agr.Sc., *Senior Plant Pathologist*: virus diseases of vines and virus seed carryover
R. A. van Baer, B.Agr.Sc., *Entomologist*: insecticidal testing; general entomology
D. G. Wauchope, B.Agr.Sc., *Plant Pathologist*: fruit diseases
W. J. Webster, B.Sc., *Entomologist*: fruit insect pests
H. B. Wilson, B.Sc.Hons., *Senior Entomologist*: general entomology; Argentine ant
- (b) CHEMICAL LABORATORY
F. H. Williams, M.Sc., Dip.Ed., F.R.A.C.I., *Chief Chemist*: general direction chemical investigations
E. J. O'Brien, B.Sc., F.R.A.C.I., *Deputy Chief Chemist*
J. M. Addison, B.Sc., A.R.A.C.I., *Senior Chemist (Supervising)*: general agricultural chemistry
R. S. Belcher, B.Sc., A.R.A.C.I., *Chemist*: pesticide analyses
R. N. Cunningham, M.Sc., Ph.D., F.R.I.C., F.R.A.C.I., *Chemist*: starch and related polysaccharides in wheat
H. F. Haynes, M.Sc., Ph.D., *Chemist*: tobacco investigations
R. H. Laby, M.Sc., *Chemist*: soil nitrogen investigations
K. C. Mander, A.M.T.C., A.R.A.C.I., *Chemist*: cereal investigations
J. R. Minchinton, Dip.Chem., A.R.A.C.I., *Chemist*: trace element analyses
H. J. Moss, B.Sc., A.R.A.C.I., *Cereal Chemist*: wheat quality; cereal investigations
J. W. Newell, B.Sc., *Soils Officer*: soil surveys
J. K. M. Skene, M.Agr.Sc., A.R.A.C.I., *Senior Soils Officer*: in charge, soil surveys and soil investigations
W. J. Walbran, M.Sc., A.R.A.C.I., *Senior Chemist*: in charge, general agricultural chemistry
- (c) FARM SURVEY RESEARCH BRANCH
D. R. Meadley, B.Agr.Sc., *Agricultural Economics Officer*
L. E. Cozens, B.Agr.Sc., Dip.Agr.Econ. (Oxon.), *Agricultural Economics Officer*
H. A. White, B.Agr.Sc., *Farm Survey Research Officer*
- (d) INFORMATION BRANCH
C. G. Webb, M.Agr.Sc., *Information Officer*
J. P. Brien, B.Agr.Sc., M.S., *Information Liaison Officer*
- 2. Agricultural Division**
W. J. B. McDonald, B.Agr.Sc., *Superintendent of Agriculture*, Head of Division
- (a) CEREALS
H. L. Hore, B.Agr.Sc., *Senior Agronomist, Head of Branch*
H. J. Sims, M.Agr.Sc., B.Com., *Senior Cereal Research Officer*: cereal investigations
W. C. Barnes, B.Sc.Agr., *Assistant Agricultural Research Officer*: cereals and soil fertility
R. S. Carne, B.Agr.Sc., D.T.A., *Agronomist*: cereals and soil fertility
J. McC. McCann, B.Agr.Sc., *Agronomist*: cereals and soil fertility
J. B. McPherson, B.Agr.Sc., *Agronomist*: cereals and soil fertility—North-Eastern District

COMMONWEALTH OF AUSTRALIA

- J. V. Mullaly, B.Agr.Sc., *Agronomist*: cereals and statistical design
C. T. Patton, B.Agr.Sc., *Agronomist*: cereals and wheat-belt pastures
D. R. Rooney, B.Agr.Sc., *Agronomist*: cereals and soil fertility—Wimmera Region
B. T. Sheahan, B.Agr.Sc., *Agricultural Research Officer*: cereal rotations and soil fertility—Mallee Region

(b) PASTURES

IRRIGATED

- A. Morgan, B.Agr.Sc., *Senior Irrigation Officer, Head of Branch*
L. F. Bartels, M.Agr.Sc., *Irrigation Research Officer*: irrigation hydraulics and efficiency
K. R. Garland, M.Agr.Sc., *District Irrigation Officer*: soil salinity and soil and pasture relations—Northern Irrigation Area
G. O. Jones, B.Agr.Sc., *Assistant Irrigation Research Officer*: soil salinity, soil and pasture relations
P. D. Kellher, B.Agr.Sc., *Irrigation Research Officer*: fertilizers, irrigation efficiency and pasture management
J. C. McColl, B.Agr.Sc., *Agricultural Extension Officer*: water penetration, annual pasture, summer fodders
J. P. Murphy, B.Sc.Agr., *Irrigation Officer*: pasture management and spray irrigation
I. W. Norman, B.Agr.Sc., *Irrigation Officer*: soil salinity, soil and pasture relations—Gippsland Area
J. T. Rumble, B.Agr.Sc., *Assistant Irrigation Research Officer*: water penetration, annual pasture, summer fodders

UNIRRIGATED

- R. L. Twentyman, B.Agr.Sc., *Senior Agrostologist, Head of Branch*
R. B. F. Allen, B.Agr.Sc., *Assistant Agrostologist*: pasture investigations at Glenormiston
J. W. Cade, B.Agr.Sc., *Agrostologist*: plant introduction, ecotypes
I. H. Cameron, B.Agr.Sc., *Agrostologist*: pasture investigations—North-East Victoria
B. C. Curnow, B.Agr.Sc., *Field Agrostologist*: pasture investigations—East Gippsland
R. R. Hedding, B.Agr.Sc., *Agrostologist*: pasture investigations—Central Victoria
W. J. Hosking, B.Agr.Sc., *District Agrostologist*: pasture investigations—West Gippsland
J. K. Kehoe, B.Agr.Sc., *Research Agrostologist*: pasture establishment and soil nutrients
S. W. Margetts, B.Agr.Sc., *Agrostologist*: pasture investigations—Glenelg Region
R. J. Newman, B.Agr.Sc., *Agrostologist*: pasture establishment, trace elements
S. C. Powell, B.Agr.Sc., *Agrostologist*: plant introduction, pasture improvement

Seed Testing Laboratory

- Miss G. R. Easton, B.Sc., *Seeds Analyst, Head of Section*: seed germination and testing techniques
Mrs. J. H. Mullett, B.Agr.Sc., *Agricultural Scientist*: seed research

(c) PLANT BREEDING

- A. R. Raw, M.Agr.Sc., *Senior Geneticist, Head of Branch*
P. H. Debrett, B.Agr.Sc., *Cereal Geneticist*: linseed and cereals, disease resistance
Miss G. B. Hotton, B.Agr.Sc., *Geneticist*: pasture grasses
D. M. Leeuwrik, B.Agr.Sc., *Assistant Geneticist*: pasture legumes

COMMONWEALTH OF AUSTRALIA

S. Lokos, Cert.Agr.Sc. (Bud.), *Assistant Geneticist*: barley
Miss H. Nirk, B.Agr.Sc. (Stuttgart), *Geneticist*: tomatoes, disease resistance
P. I. Pryke, B.Sc.Agr., *Geneticist (Vegetables)*: onions, beans
H. J. W. Swaan, B.Agr.Sc. (Groningen), *Assistant Geneticist*: potatoes
N. Thurling, B.Sc., *Geneticist*: tobacco
R. M. Young, B.Agr.Sc., *Assistant Geneticist*: wheat

(d) MISCELLANEOUS CROPS

FODDER CONSERVATION

J. A. Morrow, B.Agr.Sc., *Senior District Agricultural Officer*: silage and meadow hay
E. K. Simmons, B.Agr.Sc., *Fodder Conservation Officer*: silage and meadow hay

POTATOES

G. II. Mattingley, D.D.A., *Potato Expert*: potato culture, seed certification
W. A. Downie, B.Agr.Sc., *Agricultural Research Officer*: potato varieties, fertilizers, quality, storage

TOBACCO

F. L. French, B.Agr.Sc., *Agricultural Research Officer (Tobacco)*: tobacco varieties, fertilizers, seedbeds, quality factor

(c) RESEARCH STATIONS

IRRIGATION RESEARCH STATION, KYABRAM

F. M. Martin, B.Agr.Sc., *Manager*

MALLEE RESEARCH STATION, WALPEUP

A. P. Mann, B.Agr.Sc., *Manager*

POTATO RESEARCH STATION, HEALESVILLE

I. J. Harrsworth, B.Agr.Sc., *Manager*

RUTHERGLEN RESEARCH STATION, RUTHERGLEN

J. G. Bath, M.Agr.Sc., *Manager*

STATE RESEARCH FARM, WERRIBEE

C. P. Goulding, B.Agr.Sc., *Manager*

TOBACCO RESEARCH STATION, MYRTLEFORD

R. H. Rowan, B.Agr.Sc., *Manager*

3. Agricultural Education Division

E. T. Beruldsen, B.Sc.Agr., *Superintendent of Agricultural Education*, Head of Division
J. L. Provan, B.Agr.Sc., *Principal*, Dookie Agricultural College
C. P. Cook, B.A., B.Ed., *Principal*, Longerenong Agricultural College
T. H. Kneen, B.Agr.Sc., *Principal*, Burnley Horticultural College

4. Dairying Division

T. M. Jensen, B.Agr.Sc., *Superintendent of Dairying*, Head of Division
O. St. J. Kent, B.Sc., *Principal, School of Dairy Technology, and Chief Dairy Research Officer*: dairy technology
C. A. Bevan, B.Agr.Sc. Dairy Tech. (N.Z.), *Dairy Science Officer*: milk products
C. J. Bradbury, B.Agr.Sc., *Senr. Supervisor of Herd Testing*: dairy herd recording and improvement
R. A. Buchanan, M.Sc. (Iowa), B.Agr.Sc., *Milk Products Officer*: milk products
D. J. Dawson, B.Sc., *Dairy Research Officer (Biochemist)*: dairy technology

COMMONWEALTH OF AUSTRALIA

- B. D. Dixon, B.Agr.Sc.Dairy Tech. (N.Z.), *Dairy Research Officer*: dairy technology
H. P. Edgoose, B.Agr.Sc., *Dairy Husbandry Officer*: dairy farm management
H. M. Elder, B.V.Sc., *Senior Veterinary Milk Supply Officer*: city milk supervision
J. T. Feagan, B.Agr.Sc., *Dairy Research Officer (Biochemist)*: dairy technology
K. E. Flynn, B.Agr.Sc., *Dairy Husbandry Officer*: dairy farm management
R. I. Howey, B.Agr.Sc.Dairy Tech. (N.Z.), *Milk Products Officer*: milk products
T. N. Maclean, B.Agr.Sc., *Supervisor of Herd Testing*: dairy herd recording and improvement
D. J. Myers, M.Agr.Sc., *Dairy Husbandry Officer*: dairy farm management
R. F. Pitman, B.Agr.Sc., *Assistant Dairy Husbandry Officer*: dairy farm management
K. M. Sillcock, B.Agr.Sc., *Senior Dairy Husbandry Officer*: dairy farm management
J. R. Telford, B.Agr.Sc., *Assistant Dairy Husbandry Officer*: dairy farm management

5. Horticulture Division

Melbourne

- C. E. Cole, B.Agr.Sc., *Superintendent of Horticulture, Head of Division*
R. S. Harper, B.Agr.Sc., *Senior Inspector of Horticulture, Deputy Head*

Mildura

- Civic Buildings, Deakin Avenue, Mildura. Tel.: Mildura 135
W. I. Nankivell, B.Agr.Sc., *Senior District Horticultural Officer*: citrus, vines

(a) COOL STORAGE RESEARCH SECTION

Scoresby Horticultural Research Station, Burwood Road, Ferntree Gully.
Tel.: BM.9657

- G. B. Tindale, B.Agr.Sc., *Cool Storage Research Officer*
I. D. Peggie, B.Agr.Sc., *Horticultural Research Officer*

(b) RESEARCH BRANCH

Melbourne

- R. A. Mullett, B.Agr.Sc., *Senior Horticultural Research Officer, Head of Branch*: plant physiology
P. Baxter, M.Agr.Sc., *Horticultural Research Officer*: deciduous tree fruits, vines, nutrition
W. J. Packer, B.Sc. (Corn.), *Horticultural Research Officer*: deciduous tree fruits, rootstocks, soil management
N. Veinbrants, Agron. (Riga), *Horticultural Research Officer*: deciduous fruits, growth regulators

Mildura

- R. H. Lloyd, B.Agr.Sc., *Horticultural Research Officer*: citrus, vines

Swan Hill

- 52 McCallum Street, Swan Hill. Tel.: Swan Hill 398
R. A. W. Russell, B.Agr.Sc. (Alld.), *Horticultural Research Officer*: deciduous tree fruits, vines, citrus, growth regulators

RESEARCH STATIONS

Horticultural Research Station, Tatura. Tel.: Tatura 34

- K. L. Avent, B.Agr.Sc., *Manager*
B. H. Bailey, B.Agr.Sc., *Horticultural Extension Officer*: deciduous tree fruits, pollination, irrigation

COMMONWEALTH OF AUSTRALIA

- A. C. Bakker, B.Agr.Sc., *Horticultural Research Officer*: soil water movement particularly drainage
B. Cockroft, M.Agr.Sc., *Senior Irrigation Officer*: soil physics, soil management, water movement in soils
J. C. R. Keatley, B.Agr.Sc., *Horticultural Research Officer*: deciduous tree fruits, nutrition, soil management, growth regulators
G. J. Kidman, D.D.A., *Experimental Officer*: deciduous tree fruits, nutrition, crop control
B. K. Taylor, B.Agr.Sc., *Horticultural Research Officer*: deciduous tree fruits, plant physiology, nutrition
L. A. G. van Heek, Dip.Hort., *Experimental Officer*: deciduous tree fruits, fruit quality, canning technology
Scoresby Horticultural Research Station, Burwood Road, Ferntree Gully.
Tel.: BM 9657
C. R. Brough, B.Agr.Sc., *Manager*
J. D. F. Black, B.Agr.Sc., *Horticultural Research Officer*: deciduous tree fruits, nutrition, rootstocks, soil management
S. D. Filipovic, D.Agr.Sc. (Bonn), *Horticultural Research Officer*: deciduous tree fruits, plant physiology, stock-scion relationships
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R. N. Rowe, B.Agr.Sc., *Horticultural Research Officer*: deciduous tree fruits, propagation, berry fruits

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Miss J. Yuncken, B.Agr.Sc., *Horticultural Instructor*: research liaison
Viticultural Station, Rutherglen. Tel.: Rutherglen 18
A. W. Allan, R.D.A., *Manager*: rootstocks, soil management, oenology

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D. M. Flynn, B.V.Sc., *Senior Veterinary Officer*

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- A. C. T. Hewitt, M.Agr.Sc., *Livestock Science Officer*: animal husbandry

(b) ANIMAL HUSBANDRY RESEARCH

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- (iii) *Pastoral Research Station, Hamilton.* Tel.: Yatchaw 6
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J. W. McLaughlin, B.Agr.Sc., *Livestock Research Officer*: sheep nutrition
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D. F. Langridge, B.Agr.Sc., *Livestock Research Officer*: apiculture
- (d) DISEASE INVESTIGATION
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D. Hore, B.V.Sc., *Veterinary Officer*: investigation facial eczema in sheep
D. S. McQueen, B.V.Sc., *Veterinary Officer*: investigation and control Johne's disease
G. Nicol, B.V.Sc., *Veterinary Officer*: investigation and control poultry diseases
B. Rushford, B.V.Sc., *Veterinary Officer*: investigation brucellosis in sheep
N. A. M. Wellington, B.V.Sc., *Veterinary Officer*: investigation and control skin tuberculosis
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G. S. W. Bradbury, B.Agr.Sc., *Livestock Science Officer*: random sample laying test
D. D. Ormandy, B.Agr.Sc., *Livestock Science Officer*: poultry husbandry
- (g) SHEEP AND WOOL
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P. D. Mullaney, B.Agr.Sc., *Livestock Research Officer*: sheep breeding research project
D. J. Cannon, B.Agr.Sc., *Sheep and Wool Officer*: research in sheep husbandry, fat lambs

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B. F. Hart, B.Agr.Sc.: rabbit poisoning and wombat ecology

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T. W. Donaldson, B.Agr.Sc., *Senior Research Officer*: noxious weeds of agricultural lands
L. Schmidl, B.Agr.Sc., *Senior Research Officer*: noxious weeds of grazing lands

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(ii) *Section Silviculture*

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R. J. Grose, B.Sc.For.(Melb.), Ph.D.For. (Melb.), *Silvicultural Research Officer*: assigned silvicultural research

L. A. Pedernick, B.Sc.For. (Melb.), *Forester Grade 1* : tree breeding and assigned silvicultural research

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J. Allinson, D.D.A., *District Conservation Officer*
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B. O'Brien, L.D.A., *District Conservation Officer*
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COMMONWEALTH OF AUSTRALIA

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A. A. Stirling, D.D.A., *District Conservation Officer*

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- (iv) *Upper Murray Soil Conservation District*
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A. R. Coad, M.A. (Cantab.): drainage
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T. S. Pearce, B.Agr.Sc. (Adel.): research liaison
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R. T. J. Webber, B.Agr.Sc. (Adel.), Dip.Ed.: irrigation
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Mrs. G. M. Weste, M.Sc., *Senior Demonstrator*: mycology

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A. J. Leslie, B.Sc.F. (Melb.), A.Dip.For. (Cres.), *Senior Lecturer in Forest Management*: forest economics; forest management

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7. Department of Zoology

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F. H. Drummond, M.Sc., Ph.D., *Reader*: entomology, crustacea
W. Boardman, M.Sc.: mammalian hair pattern
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particularly phosphorus; use of rock phosphate; role of fluorine

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T. E. H. Aplin, B.Sc.: toxic plants of general *Oxylobium* and *Gastrolobium*

(ii) ENTOMOLOGY BRANCH

C. F. H. Jenkins, M.A., *Government Entomologist*
P. N. Forte, B.Sc.Agr., *Senior Entomologist*: general entomology
J. Button, B.Sc.Agr.: pasture pests and general entomology
K. T. Richards, B.Sc.Agr.: tropical entomology

COMMONWEALTH OF AUSTRALIA

G. D. Rimes, B.Sc.: horticulture and general entomology
D. G. Shedley, B.Sc.Agr.: fruit fly and general entomology

(iii) PLANT PATHOLOGY BRANCH

H. L. Harvey, B.Sc.Agr., *Senior Plant Pathologist*: virus diseases, general plant pathology
S. C. Chambers, M.Sc.: cereal root rots
R. F. Doepel, B.Sc.Agr.: fruit diseases
Miss O. M. Goss, B.Sc.Hons.: nematology, general plant pathology

(iv) WEEDS AND SEEDS BRANCH

G. R. W. Meadly, M.Sc., *Officer-in-Charge*: weed control and seed certification
G. A. Pearce, B.Sc.Agr.: weed control
B. J. Quinlivan, B.A., B.Sc.Agr.: seed dormancy

3. Dairying Division

M. Cullity, B.Sc.Agr., *Superintendent*
H. G. Elliott, Dip.Agr., *Assistant Superintendent*
S. L. Dilkes, B.Sc.Agr., *Dairy Cattle Husbandry Officer*: animal husbandry
K. Needham, B.Sc.Agr., *Officer-in-Charge Dairy Produce and Factory Supervision*
F. E. Ryan, B.Sc.Agr.Hons., *Agrostologist*: pasture management and establishment investigations

4. Horticultural Division

H. R. Powell, B.Sc.Agr., *Superintendent*
J. P. Eckersley, B.Sc.Agr., *Assistant Superintendent*
A. E. Baker, B.Sc.Agr., *Tobacco Adviser*
J. P. Fallon, B.Sc.Agr., *Senior Adviser, Vegetables*
W. R. Jamieson, Dip.Ocn., *Viticulturist*
F. M. Melville, B.Sc.Agr., *Senior Adviser, Fruit*

5. North West Division

W. M. Nunn, B.Sc.Agr., *Superintendent*
J. H. Auty, B.V.Sc.: animal husbandry
K. Fitzgerald, B.Sc.Agr.: pastoral ecology
H. Suijendorp, B.Sc.Agr.: pastoral ecology
D. G. Wilcox, B.Sc.Agr.: pastoral ecology

6. Plant Research Division

G. H. Burvill, M.Agr.Sc., *Superintendent*
L. T. Jones, B.Sc.Agr., *Senior Plant Research Officer*: viticulture and vegetables
E. N. Fitzpatrick, M.Sc.Agr.: pastures, guayule and radioisotopes
N. J. Halse, M.Sc.Agr.: horticulture and tobacco
W. J. Toms, B.Sc.Agr.: cereals and cotton

7. Soils Division

L. C. Lightfoot, B.Sc.Agr., *Superintendent and Commissioner of Soil Conservation*
S. T. Smith, B.Sc.Agr., *Senior Soil Research Officer*: wheatbelt soil salinity; citrus and apple salinity; soil moisture and irrigation
T. C. Stoneman, B.Sc.Agr.: soil structure, soil moisture, salinity

8. Wheat and Sheep Division

A. S. Wild, B.Sc.Agr., *Superintendent*
N. Davenport, B.Sc.Agr., *Assistant Superintendent*
W. L. McGarry, *Officer-in-Charge, Sheep and Wool*: sheep husbandry and wool production
J. A. Parish, B.Sc.Agr.: cereal products
J. T. Reeves, M.Sc.Agr.: plant breeding

COMMONWEALTH OF AUSTRALIA

Vermin Control Branch

A. R. Tomlinson, *Chief Vermin Control Officer*

C. D. Gooding, B.Sc.Agr.: control of rabbits, wild dogs, etc.

B. FORESTS DEPARTMENT

Fourth Floor, Rural and Industries Bank Building, Barrack Street, Perth.
Tel.: 23 2011

A. C. Harris, B.Sc., *Conservator*

G. E. Brockway, B.Sc.For., *Research Superintendent*

A. Hart, B.Sc.For., Dip.For.: silvicultural research

A. B. Hatch, B.Sc., Dip.For.: nutrition and soils

O. W. Loneragan, B.Sc.For., Dip.For.: silvicultural research

D. H. Perry: genetics

J. A. Thomson: arboriculture

H. C. Wickett, B.Sc.For., M.Sc., Dip.For., A.M.I.E. (Aust.): utilization

C. UNIVERSITY OF WESTERN AUSTRALIA

1. Institute of Agriculture

Nedlands. Tels.: Perth 86 1803 and 86 2791

E. J. Underwood, Ph.D., B.Sc.Agr., F.A.A., F.A.I.A.S., *Director and Professor of Agriculture*: animal nutrition and physiology, trace elements

C. Asher, B.Sc.Agr., *Research Officer in Plant Nutrition*: potassium nutrition of pasture species

M. Dilworth, B.Sc.Agr., *Research Officer in Soil Microbiology*: biochemistry of nitrogen fixation

A. Egan, B.Sc.Agr., *Research Officer in Animal Nutrition*: sheep nutrition

C. M. Francis, B.Sc.Agr., *Research Officer in Plant Genetics*: the genetics of subterranean clover and lupins

J. S. Gladstones, B.Sc.Agr., Ph.D., *Lecturer in Agronomy*: lupin breeding and agronomy

P. H. Graham, B.Sc.Agr., *Research Officer in Soil Microbiology*: serological and classification studies with rhizobia

A. A. Holland, M.Sc., *Research Officer in Soil Microbiology*: ecology of soil micro-organisms

J. F. Loneragan, B.Sc., Ph.D., *Senior Lecturer in Soil Science*: plant-soil mineral relations

N. R. McKeown, M.Sc.Agr., *Research Officer in Agronomy*: herbage evaluation studies

R. G. Mauldon, M.Sc.Agr., Ph.D., *Senior Lecturer in Farm Management*: production economics and farm management

A. J. Millington, D.Sc.Agr., *Reader in Agronomy*: pasture, plant breeding and agronomy

R. J. Moir, B.Sc.Agr., *Reader in Animal Nutrition*: rumen microbiology and sheep nutrition

C. A. Parker, B.Sc.Agr., Ph.D., *Senior Lecturer in Soil Microbiology*: nitrogen fixation

M. L. Parker, M.Sc.Agr., *Research Officer in Agricultural Economics*

G. R. Pearce, B.Sc.Agr., *Research Officer in Animal Nutrition*: sheep nutrition

H. P. Schapper, B.Com., Ph.D., *Reader in Agricultural Economics*: agricultural economics and farm management

D. W. Treloar, B.Sc.Agr., *Research Officer in Agricultural Economics*

COMMONWEALTH OF AUSTRALIA

2. Botany Department

Nedlands. Tel.: Perth 86 2481

- B. J. Grieve, Ph.D. (Lond.), M.Sc. (Melb.), F.L.S., *Professor*: physiological ecology
Miss A. M. Baird, M.Sc. (W.A.), *Senior Lecturer*: ecology
N. H. Brittan, B.Sc., Ph.D. (Dunelm), *Senior Lecturer*: cytogenetics
S. H. James, M.Sc. (Syd.), *Lecturer*: cytogenetics
G. G. Smith, M.Sc. (W.A.), *Lecturer*: algal ecology

3. Zoology Department

Nedlands. Tel.: Perth 86 2481

- H. Waring, F.A.A., D.Sc. (Aberd.), *Professor*
Mrs. M. E. Finch, M.Sc. (W.A.), *Lecturer*: Macropod digestion
E. P. Hodgkin, B.Sc. (Manc.), D.Sc. (W.A.), *Reader in Entomology*: littoral and shallow water marine fauna limnology
R. L. Kirk, M.Sc. (Birm.), D.Sc. (W.A.), *Reader in Experimental Zoology*: blood groups and fertility
A. R. Main, Ph.D. (W.A.), *Reader*: speciation in W.A. fauna
J. W. Shield, Ph.D. (W.A.), *Senior Lecturer*: marsupial ecology and fertility
K. T. Zwicky, Ph.D. (Zür.), *Senior Lecturer*: sensory physiology of invertebrates

D. WESTERN AUSTRALIAN MUSEUM

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Primarily concerned with zoology, palaeontology and anthropology.

- W. D. L. Ride, M.A., D.Phil. (Oxon.), *Director*: taxonomy, biology and palaeontology of marsupials
I. M. Crawford, B.A. (Melb.), Dip.Arch. (Lond.), *Curator of Anthropology and Archaeology*: cultural anthropology
R. W. George, B.Sc., Ph.D. (W.A.), *Curator of Invertebrates*: cray-fishery and biology of the crayfish *Panulirus longipes*
G. F. Mees, Phil.Nat.D. (Leiden), *Curator of Vertebrates*: systematics of birds and fishes

NEW ZEALAND

DEPARTMENT OF AGRICULTURE

Animal Research Division

WALLACEVILLE ANIMAL RESEARCH STATION

Private Bag, Wellington. Tel.: Upper Hutt 7199. 'Grams: Vetlab, Upper Hutt

- M. B. Buddle, D.Sc., B.V.Sc., *Director*: microbiology and immunology
E. D. Andrews, M.Sc.: biochemistry, trace elements
Miss B. W. Boyes, B.Sc.: microbiology and immunology
R. V. Brunsdon, M.Sc., Ph.D.: parasitology (sheep and cattle helminths)
Miss J. N. Collett, B.Sc.: biochemistry
H. de Jong, V.D. (Utrecht), Dip.Microbiol: diagnostic microbiology
C. Drake, B.Sc.: biochemistry
M. O. Ekdale, B.A., B.Sc.: diagnostic microbiology
D. E. Gardner, B.V.Sc., Dip.Microbiol.: diagnostic pathology
J. A. A. Gardner, B.Sc.: biochemistry
A. B. Grant, B.Sc., Ph.D. (Aberd.): biochemistry
Miss E. S. Greenwood, B.Sc.: external parasites, insecticides
D. L. Harrison, B.Sc.: biochemistry, insecticide residues in animal products
L. I. Hart, M.Sc.: biochemistry
W. J. Hartley, M.R.C.V.S.: pathology
W. E. Jonas, B.V.Sc., Dip.Microbiol.: microbiology, immunology
Miss J. C. Kater, B.V.Sc.: diagnostic pathology
Miss H. M. McInnes, B.Sc.: diagnostic microbiology
I. G. McIntosh, B.Sc.: toxicology
K. E. Millar, M.Sc.: biochemistry, radiobiology
D. F. L. Money, B.V.Sc.: diagnostic pathology
T. Palmer-Jones, B.Sc.: apiculture
D. R. Ris, B.Sc.: microbiology and immunology
P. G. Roughan, B.Sc.: biochemistry
J. M. Rudge, M.Sc., Ph.D. (Edin.): microbiology and immunology
R. M. Salisbury, B.V.Sc., *Chief Diagnostic Officer*: diagnostic pathology, poultry diseases
G. Shirley, B.V.Sc.: diagnostic pathology
W. A. Te Punga, B.V.Sc., B.Sc., Dip.Bact.(Manc.): microbiology and immunology
R. G. Webster, M.Sc.: virology
L. K. Whitten, B.V.Sc., Ph.D. (McG.): parasitology
E. W. Wright, M.Sc.: biochemistry, radiobiology

TAIERI DIAGNOSTIC STATION

Taieri Agriculture Cntrc, Private Bag, Mosgiel. Tel.: Mosgiel 7143. Grams: Agriculture, Mosgiel

- B. W. Manktelow, B.V.Sc., M.R.C.V.S., Dip.Microbiol., *Diagnostic Officer*: diagnostic pathology, mycology
R. R. Russell, B.Sc.: diagnostic microbiology
Miss F. E. Sligo, M.Sc.: parasitology

RUAKURA ANIMAL RESEARCH STATION

Private Bag, Hamilton. Tel.: 65-189. 'Grams: Agfarm, Hamilton

C. P. McMeekan, C.B.E., B.Agr.Sc., Ph.D., *Director*

Animal Nutrition

- L. R. Wallace, M.Agr.Sc., Ph.D., *Assistant Director*: energetics of milk production from pasture (in charge)

NEW ZEALAND

J. B. Hutton, M.Agr.Sc., Ph.D.: rumen metabolism—calorimetry
R. J. Lancaster, M.Sc.: nutritional chemistry—special reference silage
N. A. Worker, M.Agr.Sc., Ph.D.: mineral metabolism

General Biochemistry

N. T. Clare, M.Sc.: blood chemistry of sheep, chemical assay of Sporidesmin (in charge)
R. Hodges, M.Sc., Ph.D.: organic chemistry
J. W. Ronaldson, M.Sc.: chemistry of Sporidesmin
Miss A. E. G. Stevenson, B.Sc., A.R.I.C.: intake of free-grazing ruminants
A. Taylor, B.Sc., Ph.D.: *Research Fellow*: biochemistry of facial eczema
E. P. White, M.Sc., D.Sc.: structure of Sporidesmin; chemistry of plant alkaloids

Pathology

D. C. Dodd, B.V.Sc.: general diagnostic studies (in charge)
G. C. Cairns, B.Sc.: parasitology
D. O. Cordes, B.V.Sc.: veterinary pathology
M. R. Coup, B.Sc.: toxicology
P. H. Mortimer, B.V.Sc., M.A., *Research Fellow*: facial eczema
E. H. Shortridge, B.Sc., M.R.C.V.S.

Animal Genetics

P. J. Brumby, M.Agr.Sc., Ph.D.: selection methods

Animal Reproduction

D. G. Edgar, B.Sc., Ph.D., M.R.C.V.S.: physiology of reproduction in sheep
W. H. Bishop, M.R.C.V.S.: general surgery

Meat Production

Miss E. K. Walker, M.Agr.Sc.: growth and development of beef cattle

Biometrics

A. H. Carter, M.A., Ph.D.: population genetics and general biometrics
K. R. Jury, M.Sc.: general biometrics

Agronomy

A. G. Campbell, M.Agr.Sc.: measurement of pasture growth and factors affecting

Microbiology

J. Drew Smith, B.Sc., M.Sc.Agr.: field studies *Pithomyces chartarum*

Biophysics

D. S. M. Phillips, M.Sc.: physics and physiology of milk let-down (in charge)
G. de la M. Nichols, B.Sc.: electronic engineering applied to animal behaviour

WHATAWHATA HILL COUNTRY ANIMAL RESEARCH STATION

Private Bag, Hamilton. Tel.: 89-175. 'Grams: Hillfarm, Hamilton

E. A. Clarke, B.Agr.Sc., *Superintendent*: sheep and cattle husbandry

I. J. Inkster, M.Agr.Sc.: sheep fertility

J. P. Joyce, M.Agr.Sc.: sheep nutrition

M. M. Wodzicka-Tomaszewska, M.Agr.Sc., Ph.D.: sheep physiology—adaptation to environment

Dairy Division

Wellington, P.O. Box 2298. Tel. 47-277

H. A. Foy, *Director*: organization generally

N. E. Briggs, *Assistant Director*: organization generally

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Wallaceville, Wellington. Tel. 7199, Upper Hutt

Chemistry and bacteriology of milk and dairy produce: also water supplies, etc.

- B. O. Greigerson, *Chemist*
G. M. Moir, M.Sc., Ph.D., F.R.I.C., *Dairy Chemist*
C. G. Rammell, B.Sc. (Birm.), *Bacteriologist*
Mrs. A. Splatte, B.Sc., *Chemist*
F. Bishop, *Technical Officer*

DAIRY PRODUCE GRADING STORE

Kings Wharf, P.O. Box 41, Auckland. Tel.: 21-589

Chemistry and bacteriology of milk and dairy produce: also water supplies, etc.

- A. G. Fricberg, M.Sc., A.R.I.C., *Senior Chemist*
R. B. Page, B.Sc.Tech., A.R.I.C., *Chemist*

Farm Advisory Division

Wellington, P.O. Box 2298. Tel.: 47-277

- J. W. Woodcock, N.D.A., *Director*: organization generally
S. H. Saxby, Dip.Agr. (Linc.), *Assistant Director*: organization generally

FIELD EXPERIMENTS SECTION, Wellington

- P. B. Lynch, M.Agr.Sc., *Controlling Officer*
K. Cottier, B.Agr.Sc.: crop production, insecticides
C. During, B.Agr.Sc.: soil fertility research
J. L. Matthews, B.Sc.: weed control research
Miss J. G. Miller, M.A., Dip.Math.Stat., *Biometrician*
N. S. Mountier, M.Sc., *Biometrician*
M. E. Yates, M.Agr.Sc.: soil conservation, water run-off experiments

RUKUHIA SOIL RESEARCH STATION

Private Bag, Hamilton

- I. L. Elliott, B.Agr.Sc.: *Superintendent*
J. E. Allen, M.Sc.: soil chemistry, spectrography
E. B. Davies, M.Sc., Ph.D., A.R.I.C.: soil chemistry
F. D. Dorofaef, B.Sc.: plant nutrition
D. E. Hogg, B.Sc.: soil chemistry, potassium availability
H. G. Hopewell, M.Agr.Sc.: soil fertility research, irrigation
K. F. Hoy, B.Sc.: fertilizers
F. C. C. Hupkens Van der Elst, Ing.Agr.: soil fertility (peat soils)
K. J. McNaught, M.Sc.: plant nutrition
R. L. Nelson, B.Sc.: soil chemistry and fertility, pot experiments
P. F. Noble, B.Sc.: soil physics, microclimatology
W. F. Rolt, B.Sc.: soil chemistry
R. E. Rose, M.Agr.Sc.: soil microbiology
F. B. Thompson, M.Sc.: weed control research
D. F. Waters, M.Sc.: soil analysis

WINCHMORE IRRIGATION RESEARCH STATION

Private Bag, Ashburton

- W. R. Lobb, B.Agr.Sc.: *Superintendent*
D. S. Rickard, M.Sc.: soil chemistry
S. D. Walker, B.Agr.Sc.: field experiments, animal husbandry

NEW ZEALAND

TAIERI AGRICULTURAL CENTRE (INVERMAY RESEARCH STATION) Private Bag, Mosgiel

G. A. Holmes, M.Sc., B.Agr., A.R.I.C.: *Superintendent*
N. A. Cullen, B.Agr.Sc.: pasture research
J. L. Grigg, M.Sc.: soil analysis

SEED TESTING STATION, SEED RESEARCH SECTION Palmerston North

Mrs. M. E. H. Johnson, B.Agr.Sc.: seed research
Miss S. C. Harrison, M.Sc.: seed research
Miss B. D. Matthews, B.Sc.: seed research

Horticulture Division

Wellington, P.O. Box 2298. Tel.: 47-277

A. M. W. Greig, B.Sc., N.D.H. (N.Z.), F.R.H.S.: *Director*: organization of horticultural work generally
R. G. Hamilton, *Assistant Director*: organization of horticultural work generally

TE KAUWHATA HORTICULTURAL RESEARCH STATION

A. McKissock, M.S. (Calif.), Dip.Hort. (N.Z.), *Scientific Officer*: viticulture and wine making research

LEVIN HORTICULTURAL RESEARCH STATION Kimberley Road, Levin

W. R. Boyce, M.Sc., *Superintendent*: organization generally of research station and weed control horticultural crops
L. A. Porter, M.Agr.Sc.Hort., *Scientific Officer*: berry fruit research
A. B. Webster, B.Sc.Hort. (R'dg.), N.D.H. (U.K.), *Senior Scientific Officer*: outdoor vegetables research
R. A. J. White, B.Sc. (R'dg.), *Scientific Officer*: glasshouse crops research

LEVIN HORTICULTURAL LABORATORY Department of Agriculture, Levin

G. Grandison, B.Sc., *Scientific Officer*: plant pathology
D. C. M. Manson, B.Agr.Sc., *Scientific Officer*: entomology
L. G. Morrison, B.A., B.Sc., B.Agr.Sc., D.P.A., *Scientific Officer*: entomology
D. A. Slade, M.Agr.Sc.Hort., *Scientific Officer*: therapeutants

DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH

Head Office, Wellington

P.O. Box 8018, Wellington. Tel.: 48-650

W. M. Hamilton, M.Agr.Sc., N.D.H. (N.Z.), D.Sc. (N.Z.), *Secretary*: general administration of research; land utilization; agricultural economics
L. W. Tiller, B.Sc., A.N.Z.I.C., *Assistant Secretary (Agriculture and Biology)*: general administration of agricultural and biological research
I. L. Baumgart, B.A., B.Sc.: general administration of agricultural and biological research; land utilization

Animal Ecology Division

P.O. Box 466, Lower Hutt. Tel.: 69-059 Wellington

K. Wodzicki, M.Sc. (N.Z.), Ph.D. (Cracow), *Director*: vertebrate ecology
P. C. Bull, M.Sc. (N.Z.): vertebrate ecology (especially parasitology)

NEW ZEALAND

J. E. C. Flux, B.Sc. (Aberd.); hare ecology
J. A. Gibb, M.A. (Oxon.), D.Phil. (Oxon.); vertebrate ecology
R. H. Taylor: ecology of mammals

Applied Mathematics Laboratory

P.O. Box 8018, Wellington. Tel.: 54-406

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J. H. Darwin, M.Sc. (N.Z.), B.A. (Cantab.), Ph.D. (Manc.); mathematical statistics
A. C. Glenday, M.A. (N.Z.), B.Sc. (Lond.); applied statistics
B. I. Illyman, M.Sc. (N.Z.), B.A. (Cantab.), Ph.D. (Birm.); mathematical genetics
H. S. Roberts, M.A. (N.Z.); applied statistics
H. R. Thompson, M.Sc. (N.Z.), Ph.D. (Manc.); applied statistics

Botany Division

Private Bag, Christchurch. Tel.: 65-341, 65-342

E. J. Godley, M.Sc., Ph.D., *Director*; genetics breeding systems, subantarctic botany
H. E. Connor, M.Sc.; biosystematics and breeding systems grasses
A. P. Druce, B.E.; ecology
F. J. F. Fisher, M.Sc., Ph.D.; biosystematics *Ranunculus*, morphogenesis
A. J. Healy, M.Agr.Sc., *Assistant Director*; N.Z. adventive plants
Miss R. Mason, M.Sc.; water plants
Miss L. B. Moore, M.Sc.; taxonomy (including seaweeds); ecology grasslands
W. R. Sykes, B.Sc.; horticultural botany
P. Wardle, M.Sc., Ph.D.; ecology, timberlines
V. D. Zotov, M.Sc.; taxonomy grasses

Crop Research Division

LINCOLN

Private Bag, Christchurch. Tel.: 65-342 Christchurch and 45 Lincoln

L. Corkill, M.Agr.Sc., D.Sc., *Director*
R. M. Allison, M.Sc., A.N.Z.I.C., Ph.D.; plant physiology and biochemistry
R. C. Close, M.Sc.; potatoes
L. G. L. Copp; cereals
C. M. Driver, M.Agr.Sc.; potatoes
J. D. Ferguson, B.Sc., Ph.D.; plant physiology
H. J. Giesen, Ir.; vegetables
J. Lammerink, Ir.; field crops
J. M. McEwan, M.Sc., Ph.D.; cereals
T. P. Palmer, M.Agr.Sc.; field crops
K. K. Pandey, M.Sc., Ph.D.; genetics
R. F. M. Van Steveninck, Ing.Agr. (Wag.), Ph.D. (Lond.); plant physiology
G. M. Wright, M.Sc.; cereals

HOP RESEARCH STATION

Riwaka, R.M.D., Motueka. Tel.: 515

R. H. J. Roborgh, D.Agr., *Superintendent*

VEGETABLE STATION

Robinson Road, Otahuhu. Tel.: 150K

D. E. Yen, M.Agr.Sc., *Officer-in-Charge*
Miss J. A. Wheeler, B.Sc.

NEW ZEALAND

Dominion Laboratory

Private Bag, Petone. Tel.: 69-199. 'Grams: Domlab, Petone

P. J. Clark, M.Sc., A.N.Z.I.C., *Dominion Analyst*: pesticides, apple scald

Dominion Physical Laboratory

Gracefield, Lower Hutt. Tel.: 69-199. 'Grams: Physical, Lower Hutt

W. H. Ward, B.E., F.Inst.P., *Director*

ELECTRON MICROSCOPY SECTION

D. M. Hall, M.Sc., *Officer-in-Charge*: structure of teeth; plant surfaces

W. S. Bertaud, B.Sc.: cytology of spermatogenesis

PLANT PHYSICS SECTION

M. C. Probine, M.Sc., Ph.D., *Officer-in-Charge*: structure of plant cell walls

M. A. Collins, M.Sc.: electron spin resonance in biology

K. J. McCree, M.Sc., Ph.D. (Lond.), D.I.C.: photoconductivity of organic monolayers

B. A. Meylan, M.Sc.: fine structure of conifer tracheids

Entomology Division

HEADQUARTERS, P.O. Box 223, Nelson. Tel.: 80-184. 'Grams: Entlab, Nelson

W. Cottier, D.Sc., F.R.S. (N.Z.), *Director*

W. C. Clark, M.Sc., Ph.D., D.I.C.: nematodes

B. B. Given, M.Sc., *Head*: biological control of insects

E. S. Gourlay, F.R.S. (N.Z.): curator of insect collections

G. W. Ramsay, M.Sc., Ph.D.: taxonomy of Coleoptera

E. W. Valentine, B.Agr.Sc.: biological control of insects

SUBSTATION, LINCOLN

C/o Crop Research Division, Private Bag, Christchurch

J. M. Kelsey, B.Sc., *Officer-in-Charge*: pasture insects

L. J. Dumbleton, B.Sc.For.: insect survey; Simuliids

A. D. Lowe: population dynamics of *Brevicoryne brassicae* L.

SUBSTATION, PALMERSTON NORTH

C/o Grassland Division, Private Bag, Palmerston North

J. M. Hoy, M.Sc., *Officer-in-Charge*: biological control of weeds

A. C. Eyles, M.Agr.Sc.: insect surveys

D. H. Todd: biting flies of dairy cattle, biological control surveys, *Heteronychus sanctae-helenae* Blanch

SUBSTATION, AUCKLAND

C/o Plant Diseases Division, Private Bag, Auckland

R. A. Cumber, B.Sc., Ph.D., D.I.C., *Officer-in-Charge*: biological control of insects

J. S. Timlin, B.Sc., Ph.D., D.I.C.: general entomology

Fruit Research Division

HEADQUARTERS: Owairaka, Auckland.

Private Bag, Auckland. Tel.: 81-199. 'Grams: Plantlab

J. D. Atkinson, M.Agr.Sc., *Director*

R. L. Bielecki, M.Sc., Ph.D. (Syd.): phosphate metabolism

E. G. Bolland, B.Sc., Ph.D. (Cantab.): plant nutrition

NEW ZEALAND

- R. M. Davison, M.Sc., Ph.D. (Lond.): plant growth substances
W. A. Fletcher, B.Sc.: *Fruit and Vegetable Preservation Officer*
Miss J. K. Grigor, B.Sc.: plant tissue culture
D. I. Jackson, M.Agr.Sc.: tree physiology and cool storage
D. S. Letham, M.Sc., Ph.D. (Birm.): biochemical factors influencing storage quality
D. W. McKenzie, M.Sc., Ph.D. (Lond.): rootstock and variety investigations of pome fruits
H. M. Mouat, B.Sc., Ph.D. (Calif.): rootstock and variety investigations of citrus and other subtropical fruits
C. A. S. Padfield: fruit culture and cold storage

Grasslands Division

Private Bag, Palmerston North. Tel. 8140
P. D. Scars, M.A., B.Com., D.Sc., *Director*

PASTURE ECOLOGY SECTION

R. W. Brougham, B.Sc., *Chief Pasture Ecologist*
D. B. Edmond, M.Agr.Sc.: animal treading
G. S. Harris, B.Sc.: seeds and germination

PLANT BREEDING SECTION

P. C. Barclay, M.Sc., Ph.D., *Chief Plant Breeder*
L. B. Anderson, M.Sc.: pasture plant breeding and genetics
L. W. Gorman, M.Agr.Sc.: strain selection and testing
Miss R. Lucanus, Dr.Agr.: pasture plant breeding
A. T. McNeur, M.Agr.Sc.: strain selection and testing

SOIL FERTILITY SECTION

R. H. Jackman, B.Sc., Ph.D., *Chief Soil Chemist*
M. C. H. Mouat, M.Agr.Sc.: soil fertility

SUBSTATION, LINCOLN

C/o Crop Research Division, Private Bag, Christchurch
K. F. O'Connor, B.Agr.Sc., Ph.D., *Officer-in-Charge*

SUBSTATION, GORE. P.O. Box 112, Gore

A. J. Harris, M.Agr.Sc., *Officer-in-Charge*

SUBSTATION, KAIKOHE. P.O. Box 194, Kaikohe

J. P. Lambert, M.Agr.Sc., *Officer-in-Charge*

SUBSTATION, TE AWA (Hill-country)

C/o Grasslands Division, Private Bag, Palmerston North
F. E. T. Suckling, Dip.Dairy Farming, *Officer-in-Charge*

Plant Chemistry Division

Private Bag, Palmerston North. Tel.: 8140

- A. T. Johns, M.Sc., Ph.D., *Director*
R. W. Bailey, M.Sc., Ph.D.: carbohydrate chemistry
N. A. Bathurst, M.Sc.: nitrogen metabolism
G. W. Butler, M.Sc., Ph.D.: plant biochemistry and ruminant nutrition
R. T. J. Clarke, M.Sc.: rumen microbiology
R. M. Greenwood, M.Sc.: clover rhizobia
J. W. Lyttleton, M.Sc., Ph.D.: protein chemistry and biosynthesis

NEW ZEALAND

- E. M. Moustafa, M.Sc., Ph.D.: plant biochemistry
G. B. Petersen, M.Sc., Ph.D.: nucleic acids
P. J. Peterson, M.Sc.: mineral metabolism and plant biochemistry
M. H. Proctor, B.A., M.S., Ph.D.: bacterial metabolism
C. S. W. Reid, M.Sc., ruminant physiology
M. J. Ulyatt, M.Agr.Sc.: ruminant nutrition
K. I. Williamson, M.Sc.: biophysics, surface active studies

Plant Diseases Division

- Private Bag, Auckland. Tel.: Auckland 81-199
E. E. Chamberlain, M.Sc., D.Sc. (N.Z.), *Director*: virus diseases of fruit trees and grape vines
R. M. Brien, Dip.Agr. (Linc.): plant pathology; identification of diseases
P. J. Brook, M.Sc., Ph.D. (N.Z.): plant pathology; fruit tree diseases
Miss J. M. Dingley, M.Sc. (N.Z.): fungous taxonomy; Ascomycetes
D. W. Dye, B.Agr.Sc., Ph.D. (Edin.): bacterial taxonomy; *Xanthomonas*; legume cultures
M. H. Dye, M.Sc., Ph.D. (Lond.): agricultural microbiology
P. R. Fry, M.Sc. (N.Z.): virus diseases of plants
K. M. Harrow, M.Agr.Sc. (N.Z.): plant pathology; plant protection chemicals
R. E. R. McNabb, M.Sc. (N.Z.): fungous taxonomy; basidiomycetes
R. E. F. Matthews, M.Sc., Ph.D. (Cantab.): plant viruses; chemotherapy; nucleic acids
F. J. Morton, B.Sc., Ph.D. (Lond.): fungous taxonomy; fungi imperfecti
F. J. Newhook, M.Sc., Ph.D. (Lond.), D.I.C.: plant pathology; soil-borne diseases
R. K. Ralph, B.Sc., Ph.D. (Syd.): organic chemistry; purines, pyrimidines, nucleic acids
D. A. Shackleton, M.Agr.Sc. (N.Z.): bacterial pathology
D. Spiller, B.Sc., Ph.D. (Cantab.): entomology; insecticides; timber insects
T. R. Vernon, M.Sc., Ph.D. (Lond.), D.I.C.: microbiology; antibiotics; taxonomy of actinomycetes

FIELD CROP DISEASE SUBSTATION

- C/o Crop Research Division, Private Bag, Christchurch
H. C. Smith, M.Agr.Sc., Ph.D. (Cantab.), *Officer-in-Charge*: plant pathology; field crop diseases
J. D. Allen, B.Sc. (Edin.): plant pathology; seed pathology; deficiency diseases
A. D. Thomson, M.Sc., Ph.D. (Cantab.): plant pathology; field crop diseases; plant viruses
Miss E. E. Walker, M.A. (N.Z.): plant pathology; diseases of tobacco and hops

PASTURE PLANT DISEASE SUBSTATION

- C/o Grasslands Division, Private Bag, Palmerston North
G. C. M. Latch, M.Agr.Sc., Ph.D. (Wis.), *Officer-in-Charge*: fungous diseases of pasture plants

Plant Physiology Unit

- Private Bag, Palmerston North. Tel.: 8140
K. J. Mitchell, B.Agr.Sc., Ph.D., *Officer-in-Charge*: controlled climate investigations
R. G. Thomas, B.Sc.Hons., Ph.D.: reproductive physiology

Soil Bureau

- P.O. Box 8001, Wellington, C.1. Tel.: 48-650
New laboratories are being erected and in mid-1962 the address will be: Private Bag, Taita.
N. H. Taylor, O.B.E., F.R.S. (N.Z.), *Director*: soil genetics and classification

NEW ZEALAND

J. K. Dixon, M.Sc. (N.Z.), Ph.D. (Lond.), D.I.C., F.R.I.C., F.N.Z.I.C.,
F.R.S. (N.Z.), *Assistant Director: soil chemistry*
I. J. Pohlen, M.A. (N.Z.): pedology

AGRICULTURAL SOIL PHYSICS

K. S. Birrell, M.Sc. (N.Z.), A.R.I.C., A.N.Z.I.C., *Senior Physicist: physico-chemical properties of soil allophane (in charge)*
E. Z. Arlidge, M.Sc. (N.Z.), Ph.D. (Aberd.): soil structure of cropped soils, Lincoln
M. W. Gradwell, B.Sc. (N.Z.): frost in soils, structure and aeration of pasture soils
R. J. Jackson, B.Sc. (Hull): agricultural soil physics; hydrology of a catchment
D. C. McDonald, B.Sc. (N.Z.): agricultural soil physics

PHYSICAL CHEMISTRY

M. Fieldes, D.Sc. (N.Z.), A.N.Z.I.C., *Senior Physical Chemist: soil mechanisms, clay mineralogy, radioactivity, chemistry of a catchment (in charge)*
G. G. C. Claridge, M.Sc., Ph.D. (N.Z.): clay mineralogy, crystal structure, Antarctic soils
R. J. Furkert, B.Sc. (N.Z.): experimental pedology, surface chemistry, radioactive tracers
H. R. Penhale, M.Sc. (N.Z.), A.N.Z.I.C.: soil corrosion, cathodic protection
N. Wells, B.Sc. (Lond.), A.N.Z.I.C.: soil geochemistry, minor element availability

SOIL BIOLOGY

K. E. Lee, D.Sc. (N.Z.): earthworms and small animals in soils (in charge)
Miss M. E. di Menna, M.Sc., Ph.D. (N.Z.): yeasts in soils
R. M. Jackson, B.Sc., Ph.D. (Lond.): soil mycology (on loan from Rothamsted Experimental Station)
J. K. Martin, M.Sc., Ph.D. (N.Z.), A.N.Z.I.C.: biochemistry of phosphorus compounds in soil
Miss M. Martin-Smith, M.Sc. (N.Z.): biochemical properties of soil
D. J. Ross, M.Sc. (N.Z.), Ph.D. (Lond.), Dip.Bact. (Lond.), A.N.Z.I.C.: biochemistry of soil micro-organisms, enzymes in soil
J. D. Stout, M.A., Ph.D. (N.Z.): bacteria and protozoa in soils
K. Strzemienski, Ph.D. (Cracow): plants antagonistic to facial eczema fungus
R. H. Thornton, M.Agr.Sc. (N.Z.), Ph.D. (Nott.): soil mycology
J. P. Widdowson, M.Agr.Sc. (N.Z.): pot experiments

SOIL CHEMISTRY

A. J. Metson, M.Sc. (N.Z.), A.N.Z.I.C., *Senior Chemist: analytical methods, potassium, magnesium (in charge)*
W. B. Healy, M.Sc. (N.Z.), Ph.D. (Rutgers), A.N.Z.I.C.: microelements in relation to dental health
Miss E. B. Kidson, D.Sc. (N.Z.), F.R.I.C., F.N.Z.I.C.: plant nutrition, Nelson
R. B. Miller, B.A., M.Sc. (N.Z.), Agr.Lic. (Sweden), A.N.Z.I.C.: forest soils
W. M. H. Saunders, M.Sc. (N.Z.), Ph.D. (Aberd.), A.N.Z.I.C.: phosphates, potassium

SOIL ANALYTICAL LABORATORY

L. C. Blakemore, *Senior Technical Officer: analytical methods, sulphur (in charge)*

NEW ZEALAND

SOIL MECHANICS

- R. D. Northey, M.Sc. (N.Z.), Ph.D. (Lond.), D.I.C., *Senior Physicist*: soil mechanics (in charge)
B. H. Alley, B.Sc. (N.Z.): soil mechanics, Auckland

SOIL SURVEYS (NORTH ISLAND)

- Soil surveys in areas adjacent to listed headquarters.
- H. S. Gibbs, M.Sc. (N.Z.), *Senior Pedologist*, Wellington: soil surveys, North Island (in charge)
J. G. Bruce, M.Sc. (N.Z.), *Pedologist*, Hamilton
J. D. Cowie, B.Sc. (N.Z.), *Pedologist*, Palmerston North
Mrs. B. C. Edgar, B.Sc. (Soton.), Ph.D. (Dunelm), *Pedologist*, Wellington: micro-pedology
B. S. Kear, B.Sc. (Birm.), *Pedologist*, Wellington
G. E. Orbell, M.Sc. (N.Z.), *Pedologist*, Palmerston North
W. A. Pullar, B.Sc. (N.Z.), A.O.S.M., *Pedologist*, Whakatane

SOIL SURVEYS (PACIFIC)

- A. C. S. Wright, B.Sc. (Leeds), *Senior Pedologist*: soil surveys (on loan to Chile)

SOIL SURVEYS (SOUTH ISLAND)

- Soil surveys in areas adjacent to listed headquarters.
- J. E. Raeside, M.Sc. (N.Z.), A.R.I.C., *Senior Pedologist*, Dunedin: soil mineralogy, soil surveys, South Island (in charge)
J. E. Cox, M.A. (Cantab.), *Pedologist*, Christchurch
E. J. B. Cutler, B.Sc. (N.Z.), *Pedologist*, Dunedin
M. L. Leamy, M.Sc. (N.Z.), *Pedologist*, Alexandra
J. D. McCraw, M.Sc. (N.Z.), *Pedologist*, Alexandra
C. G. Vucetich, B.Agr.Sc. (N.Z.), *Pedologist*, Christchurch

Tobacco Research Station

- R.D.3. Motueka. Tel.: 501 S
R. Thomson, H.D.A., *Director*: agronomy

Wheat Research Institute

- 197 Hercford Street, Christchurch. Tel.: 65-344
E. W. Hullett, M.Sc., *Director*: physics of baking
R. W. Cawley, M.Sc., *Assistant Director*: biochemistry of bread dough
P. Meredith, M.Sc. (Birm.), Ph.D. (Birm.): wheat proteins, dough structure
T. A. Mitchell, M.Sc.: analytical methods; instrumentation

The Dairy Research Institute (N.Z.)

- Massey College P.O., Palmerston North. Tel.: Palmerston North 80051.
'Grams: Daisearch
- H. R. Whitehead, D.Sc. (Leeds), A.N.Z.I.C., F.R.S. (N.Z.), *Director*
F. H. McDowall, O.B.E., M.Sc. (N.Z.), D.Sc. (Lond.), F.N.Z.I.C., *Deputy Director and Chief Chemist*
Miss E. J. Bush, B.Sc. (N.Z.), *Bacteriologist*
J. G. Clarke, M.Sc. (N.Z.), *Chemist*
G. A. Cox, M.Sc. (N.Z.), *Bacteriologist*
R. M. Dolby, M.Sc. (N.Z.), Ph.D. (Lond.), A.N.Z.I.C., *Chemist*
J. M. Erskine, B.Sc.Hons. (Liv.), *Bacteriologist*
W. L. Harkness, Dip.Dy.M.A.C., *Chief Cheesemaker*
D. W. King, B.E.Chem., B.Sc. (N.Z.), *Acting Chief Engineer*
R. S. Jebson, B.E.Chem., B.Sc. (N.Z.), A.N.Z.I.C., *Chemical Engineer*

NEW ZEALAND

G. B. Latimer, B.E.Chem., B.Sc. (N.Z.), *Chemical Engineer*
R. C. Lawrence, B.Sc.Hons. (Lond.), A.N.Z.I.C., *Biochemist*
B. S. Le Heron, Dip.Dy.M.A.C., *Chief Buttermaker*
A. K. R. McDowell, M.Sc. (N.Z.), A.R.I.C., F.N.Z.I.C., *Chemist*
W. A. McGillivray, M.Sc., Ph.D. (N.Z.), F.N.Z.I.C., *Chief Bacteriologist*
P. S. Robertson, M.Sc. (N.Z.), Ph.D. (R'dg.), A.N.Z.I.C., *Bacteriologist*
J. A. Singleton, B.Sc., B.Agr.Sc. (N.Z.), *Dairy Factory Superintendent* (Department of Agriculture)
V. T. Vickers, Grad.I.Mech.E., *Mechanical Engineer*

The New Zealand Fertilizer Manufacturers' Research Association (Inc.) Otara Road, Otahuhu. Tel.: 150 S

B. W. Doak, D.Sc., *Director*
I. Evans, insecticides in fertilizers and soils
P. J. Gallagher, B.Sc.: fertilizer chemistry
F. B. Muller, M.Sc.: agronomy, phosphates and sulphur

The Meat Industry Research Institute of New Zealand (Inc.) East Street, P.O. Box 617, Hamilton. Tel.: 56-159. 'Grams: Mirinz (Hamilton)

N. H. Law, M.Sc., F.R.I.C., F.N.Z.I.C., *Director*
C. L. Davey, M.Sc., Ph.D. (Cantab.): biochemistry, nucleotide metabolism
R. L. Earle, B.E.Chem., B.Sc., Ph.D. (Glas.): refrigeration, physics and engineering
R. H. Locker, M.Sc., Ph.D., A.N.Z.I.C.: biochemistry, protein structure
B. B. Marsh, M.Sc., Ph.D. (Cantab.), A.N.Z.I.C.: biochemistry, muscular contraction
P. M. Nottingham, M.Sc., Ph.D. (Aberd.): microbiology

New Zealand Leather and Shoe Research Association (Inc.) Gracefield, Lower Hutt. Tel.: 64-851

F. W. Woodroffe, M.Sc., *Director*
G. W. Vivian, M.Sc., Ph.D., *Deputy Director*
F. G. Caughley, B.A., M.Sc., *Research Officer*

The New Zealand Wool Industries Research Institute (Inc.) 444 George Street, Dunedin, N.I. Tel. 79-810

L. F. Story, B.Sc., Ph.D., A.R.I.C., *Director*
R. L. Bratt, B.Sc.Text., A.T.I.: wool manufacturing
D. A. Ross, M.Agr.Sc., Ph.D.: wool production
R. G. Stewart, M.Sc., A.R.I.C.: wool scouring

Wool Research Organization of New Zealand (Inc.) . P.O. Box 5115, Wellington N. F. Roberts, M.Sc., F.Inst.P., *Director*

NEW ZEALAND FOREST SERVICE

Wellington

P.O. Box 894, Wellington. Tel.: 49-660. 'Grams: Forestry
J. S. Reid, M.Sc.: forest products

Forest Research Institute

P. B. Whakarewarewa, Rotorua. Tel.: 1402. 'Grams: Frestra, Rotorua
S. D. Richardson, M.A., B.Sc., D.Phil. (Oxon.): *Director of Research*

NEW ZEALAND

ANIMAL RESEARCH

- R. I. Kean, B.Sc.: animal biology (in charge)
C. L. Batcheler, B.Sc., B.A. (Oxon.): animal biology
M. J. Daniel, B.A., M.Sc. (Br. Col.): animal biology
Mrs. M. Davidson, M.Sc.: animal biology
Miss R. G. Rees, B.Sc.: animal biology

BIOMETRICS

- W. G. Warren, M.Sc.: forest biometry
H. S. M. Fairburn, M.Sc.: forest biometry

ECONOMICS

- M. B. Grainger, B.Com.: forest economics

EXOTIC FOREST SURVEY

- T. N. Wardrop, B.A. (Oxon.): forest inventories

FOREST MANAGEMENT

- G. Duff, B.For.Sc.: forest mensuration

FOREST PATHOLOGY

- G. B. Rawlings, B.For.Sc.: forest pathology (in charge)
R. T. Baker, B.Sc. (Nott.): chemical control
C. Bassett, B.Sc., Dip.For. (Canb.): mycology
J. S. Dugdale, B.Sc.: entomology
J. W. Gilmour, M.Sc.: mycology
R. H. Milligan, M.Sc.: entomology
T. C. R. White, B.Sc., B.Sc. (Edin.): forest biology survey
R. Zondag, Ir. (Wag.): entomology

FOREST PRODUCTS

- H. R. Orman, M.Sc.: *Senior Forest Products Officer*
G. S. Brown, B.Sc. (Edin.): industrial investigations
N. H. C. Cummins, B.Sc. (Lond.): *Chemist*: wood preservation
J. M. Harris, M.Sc.: timber physics
C. R. Hellawell, M.Sc.: timber mechanics
S. Kripas, Dr.For.Sc., Dip.For.Eng. (Tharandt): timber physics
J. A. Kininmonth, B.Sc., B.A. (Oxon.): timber seasoning
A. J. McQuire, B.Sc., B.Sc. (Edin.): wood preservation
A. G. Stanger, B.Sc.: timber mechanics
J. M. Uprichard, D.Ph. (Nott.): wood chemistry

FOREST AND RANGE EXPERIMENT STATIONS

- J. T. Hollway, M.Sc., *Officer-in-Charge*
A. Cunningham, B.Sc., Dip.For. (Canb.): forest ecology
J. Y. Morris, B.Sc., Dip.Ing. ENEF (Nancy): hydrology
W. J. Wendelken, B.Sc., B.Sc. (Edin.): forest ecology
M. J. Wright, B.Agr.Sc.: alpine grassland ecology

INDIGENOUS ECOLOGY

- P. J. McKelvey, B.Sc., B.Sc. (Edin.): forest ecology
J. L. Nicholls, B.Sc.: forest ecology

SILVICULTURE

- M. H. Bannister, M.Sc.: forest botany
J. Beekhuis, M.Sc.For. (Stell.): sample plots

NEW ZEALAND

- A. E. Beveridge, M.Sc., B.A. (Oxon.); silviculture, indigenous
E. H. Bunn, B.Sc., Dip.For. (Canb.); silviculture, eucalypts
R. J. Cameron, B.Sc., B.A. (Oxon.); silviculture, indigenous
G. W. Hedderwick, B.Sc. (Edin.)
E. Larsen, Cand.Silv. (Copen.); forest seed certification
J. T. Miller, B.Sc. (Edin.); tree breeding
D. S. H. Preest, B.Sc., Dip.For. (Canb.); silviculture, indigenous
G. B. Sweet, B.Sc., Dip.For. (Canb.); tree breeding
I. J. Thulin, Cand.Silv. (Copen.); tree breeding
G. C. Weston, B.Sc., M.A. (Oxon.); forest soils
G. M. Will, M.Sc.: soil chemistry

NEW ZEALAND METEOROLOGICAL SERVICE

P.O. Box 722, Wellington. Tel.: 70-689. Grams: Weather
N. G. Robertson, M.Sc., *Climatologist*

LINCOLN COLLEGE

Christchurch. Tel.: Christchurch 62-839
M. M. Burns, C.B.E., M.Sc., Ph.D. (Aberd.), F.N.Z.I.C.: *Principal*

Agricultural Economics

B. P. Philpott, M.Com., M.A. (Leeds), Dip. Woolclg M.A.C., A.R.A.N.Z.,
Professor.
J. T. Ward, B.Litt. (Oxon.), B.Sc. (Econ.), Ph.D. (Lond.), Dip.Agr. Econ.,
F.R.S.A.

Agricultural Engineering

G. G. Lindsay, B.Sc.Agr. (R'dg.), A.M.I.Agr.E.
A. W. Riddolls, B.E. (Civil), B.Sc., A.M.I.Mech.E., A.M.N.Z.I.E., M.I.Agr.E.

Agricultural Microbiology

I. D. Blair, M.Agr.Sc., Ph.D. (Lond.)
A. P. Mulcock, M.Sc., Ph.D.

Agricultural Zoology

R. A. Harrison, D.Sc.
G. R. Williams, B.Sc.Hons.

Animal Science

I. E. Coop, M.Sc., D.Phil. (Oxon.), F.N.Z.I.C., *Professor and Vice-Principal*
D. S. Hart, M.A. (Cantab.), Dip.Dy.M.A.C., Dip.Sheep M.A.C.

Farm Management and Rural Valuation

A. H. Flay, B.Sc., M.Agr.Sc., Dip.Agr.C.A.C., F.N.Z.I.V., *Associate Professor*
H. E. Garrett, B.A., M.Agr.Sc., B.Litt. (Oxon.), A.N.Z.I.V.

Horticulture

J. H. Glazebrook, B.Sc.Hort. (R'dg.), N.D.H.

Plant Science

R. H. M. Langer, B.Sc., Ph.D. (Dunelm), *Professor*
C. E. Iversen, M.Agr.Sc., Dip.Agr.C.A.C.
T. M. Morrison, M.Sc., Ph.D.

NEW ZEALAND

Soil Science

- T. W. Walker, D.Sc., D.I.C., Ph.D., A.R.C.S., *Professor*
A. F. R. Adams, M.Sc., A.N.Z.I.C.
B. L. Elphick, B.Sc. (Lond.), A.N.Z.I.C.

Veterinary Science

- J. W. McLean, B.V.Sc. (Syd.), M.Agr.Sc., Ph.D. (Calif.), *Associate Professor*
G. G. Thomson, B.Sc.Vet.Sc. (Edin.), M.R.C.V.S.

Wool

- A. E. Henderson, B.Agr.Sc., Ph.D. (Lond.)

MASSEY AGRICULTURAL COLLEGE

Palmerston North. Tel.: 80059

- A. Stewart, D.Phil. (Oxon.), M.Agr.Sc., *Principal*
R. A. Barton, Dip.Agr.M.A.C.: composition of meat animals
D. P. Boshier, M.Sc.: reproductive physiology
D. G. Bowler, Dip.Agr.M.A.C.: drainage
R. R. Brooks, B.Sc. (Brist.), Ph.D. (Cape T.): spectrographic analysis of trace elements
Miss E. O. Campbell, M.A.: liverworts
I. L. Campbell, B.Agr.Sc., Ph.D. (Miss.), *Professor*: lactational physiology, nutrition
W. V. Candler, M.Agr.Sc., Ph.D. (Iowa), *Professor*: agricultural economics and farm management
T. S. Ch'ang, M.Agr.Sc.: inheritance of productive characters in sheep
F. R. Cockrem, M.A. (Cantab.), Ph.D.: biology of the fleece
M. W. Cross: improvements in farm machinery design
P. S. Dale, M.Sc.: scarabaeid beetles
A. W. F. Davcy, B.Agr.Sc.: dairy cattle nutrition
A. J. Dickson: telemetering of animal behaviour
A. C. Dunkin, M.Agr.Sc.: pig nutrition
A. E. Esler, M.Agr.Sc.: taxonomy of N.Z. and naturalized plants, ecology
C. V. Fifc, M.Sc.: fractionation of inorganic soil phosphorus
D. S. Flux, M.Agr.Sc., Ph.D. (R'dg.): endocrinology
L. Gurr, M.Sc.: bird behaviour
J. C. Hawke, M.Sc., Ph.D. (Cantab.): lipid research
J. H. Henson, B.Agr.Sc.: the development of new cheeses
E. R. Hodgson, M.Sc.: telemetering of animal behaviour
A. H. Hughes, M.Agr.Sc., M.S. (Wis.): telemetering of animal behaviour
H. Jacks, M.Agr.Sc., Ph.D. (Lond.), D.I.C., Dip.Ed.: control of soil pathogens
W. A. Jacques, B.Sc. (Wales), N.D.A.: improvements of pampas grass and Yorkshire fog
H. A. L. Morris, B.Sc.: food processing
R. E. Munford, M.Agr.Sc.: physiology of lactation
J. C. Newhook, M.R.C.V.S.: X-ray technique
J. A. Pollok, B.Agr.Sc., M.S. (Minn.): detailed soil surveys
A. L. Rae, M.Agr.Sc., Ph.D. (Iowa), *Professor*: inheritance of productivity in sheep and poultry
B. A. Reynolds: anaerobic infections in sheep, leptospira
E. L. Richards, M.Sc., Ph.D. (Brist.): non enzymic browning
M. Richards, B.Sc.Hort. (Nott.), N.D.H.: plant propagation
G. S. Robinson, M.Agr.Sc.: pasture establishment and improvement
R. H. Schwass, M.Agr.Sc.: root studies

NEW ZEALAND

- J. K. Scott, B.E.Hons., A.M.I.Chem.E., *Professor*: food engineering, milk quality
J. H. Tetley, D.Sc., M.Agr.Sc., *Associate Professor*: ecology of nematode parasitism in sheep
G. M. Wallace, B.Sc.: factors affecting composition of milk, protein foodstuffs
H. T. Wenham, M.Sc., M.S. (Wis.): mycology and plant pathology
J. S. Yeates, M.Sc., Ph.D. (Cantab.), Ph.D. (N.Z.): plant breeding

CAWTHON INSTITUTE

P.O. Box 175, Nelson

- C. R. Barnicoat, D.Sc. (N.Z.), Ph.D. (Minn.), F.R.I.C., F.N.Z.I.C., F.R.S. (N.Z.), *Director*
E. T. Chittenden, *Pedologist*: soil surveys and field experiments
T. B. C. Christie, M.Sc. (N.Z.), *Mycologist*: hop and fruit diseases
*Miss E. B. Kidson, D.Sc. (N.Z.), F.R.I.C., F.N.Z.I.C.: soils and pot cultures
D. J. Stanton, *Crop Experimentalist*: tomato and apple experiments
J. R. L. Walker, Ph.D. (Leeds), A.N.Z.I.C., *Biochemist*: fruit investigations
Miss J. Watson, M.Sc. (N.Z.), A.R.I.C., A.N.Z.I.C., *Chemist*: fruit and tobacco investigations
- *Officer of the D.S.I.R. seconded to the Cawthon Institute.

TUSSOCK GRASSLANDS AND MOUNTAIN LANDS INSTITUTE

P.O. Box 56, Lincoln College, Christchurch. Tel.: 62-839

- L. W. McCaskill, M.Agr.Sc., *Director*
J. G. Hughes, B.Agr.Sc., Dip.Agr.Eng., *Management Officer*

INDIA
CENTRAL GOVERNMENT
MINISTRY OF FOOD AND AGRICULTURE
DEPARTMENT OF AGRICULTURE

'Krishi Bhavan', Dr. Rajendra Prasad Road, New Delhi. Tel.: 36553. 'Grams: Agrindia

H. C. Verma, I.D.D., N.D.D. (Scot.), *Dairy Development Adviser with the Government of India*
Mahabir Prasad, B.Sc., C.E., M.I.E., M.A.S.C.E., *Irrigation Adviser to the Government of India*
N. K. Panikkar, M.A., D.Sc., F.A.Sc., F.N.I., F.Z.S.I., F.N.A.Sc., *Fisheries Development Adviser with the Government of India*
P. Bhattacharya, M.Sc., Ph.D., F.N.I., *Livestock Development Adviser with the Government of India*
R. V. Tamhane, B.Agr., Ph.D. (Lond.), *Soil Conservation Adviser to the Government of India*
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INDIA

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Radiotracer Section

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A. Sen, M.Sc., Ph.D.
R. B. Rewari, B.Sc., A.I.A.R.I.

Soil Physics and Agricultural Physics

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Soil Testing Section

- N. P. Datta, M.Sc., D.Sc. (Cal.): soil test, crop response correlations, plant nutrition, and co-ordination of all-India soil test data
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Soil Survey and Soil Physics Section

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INDIA

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M. Vijayasarathy, M.Sc., Ph.D. (Lond.), D.I.C. (Lond.), *Sugarcane Physiologist*: synchronization of flowering periods in sugarcane by photoperiodic treatments

K. V. Srinivasan, B.Sc.Agr., A.I.A.R.I., Ph.D., *Mycologist*: disease resistance in sugarcane; fungal taxonomy and physiology; soil-borne diseases

R. A. Agarwal, B.Sc.Agr., A.I.A.R.I., *Entomologist*: resistance of sugarcane varieties to pests

C. N. Babu, M.Sc., *Assistant Sugarcane Expert*: cytogenetics and breeding of sugarcane

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Indian Institute of Sugarcane Research

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PHYSIOLOGY SECTION

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M. M. Lal Tiwari, M.Sc., *Assistant Mycologist (Rust)*: epidemiology and control of sugarcane rust

INDIA

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P. Govinda Rao, B.Sc.Agr., M.S., *Government Plant Pathologist*
S. V. Pandit, B.Sc., B.Sc.Agr.: maize *Helminthosporium* leaf blight
D. Koteswara Rao, M.Sc.: cluster bean anthracnose; crop diseases
D. V. Suhba Rao, B.Sc.Agr.: *Ustilaginordea virens* on rice
C. Laxminarayan, B.Sc.Agr., A.I.A.R.I.: coconut diseases
D. Gopalakaraju, M.Sc.Agr.: bacteriological studies
R. Bchner Raj, M.Sc., M.Sc.Agr.: wheat rust studies
A. Paparao, B.Sc.Hons.: coconut diseases
D. Dakshinamurti, B.Sc.: rice blast and field testing of fungicides

CHEMISTRY SECTION

D. V. Krishna Rao, B.Sc.Agr., A.I.A.R.I., *State Agricultural Chemist and
Chief of Section*
W. Thirumala Rao, B.Sc.Agr., *Assistant Agricultural Chemist*
C. Venkata Naidu, B.Sc., *Assistant Agricultural Chemist*
M. Krishna Reddy, B.Sc.Agr., A.I.A.R.I., *Soil Chemist, Soil Testing Service*
G. Raja Rao, M.Sc., *Soil Chemist, Soil Testing Service*

SOIL SURVEYS

V. Seetha Rama Rao, B.Sc., M.Sc.Agr., *Soil Chemist*
T. Seshtagiri Rao, B.Sc., M.Sc.Agr., *Soil Correlator, Nagarjuna Sagar Project
(N.S.P.) Narasaraopet, Guntur District*
C. Dharmarao, B.Sc., *Soil Chemist, Nagarjuna Sagar Project, Ongole, Guntur Dt.*
B. Nagi Reddy, B.Sc.Agr., *Soil Chemist, N.S.P., Guntur Dt.*
Karunakar Rao, B.A., B.Sc.Agr., *Soil Chemist, N.S.P., Narasaraopet, Guntur Dt.*
T. Venkata Pathi, M.Sc.Agr., *Soil Chemist, N.S.P., Miriyala Guda, Nalgonda Dt.*
P. Krishna Murthy, B.A., B.Sc.Agr., M.Sc.Agr., *Analytical Chemist, N.S.P.,
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E. L. Narayana, B.A., B.Sc.Agr., *Analytical Chemist, N.S.P., Agricultural
College, Bapatla*
P. V. L. Narasimha Raju, B.Sc.Agr., *Agricultural Bacteriologist*

INDIA

ENTOMOLOGY SECTION

C. Krishnamoorthy, B.Sc.Agr., M.Sc.Agr., F.R.E.S., *Government Entomologist*
B. H. Krishnamoorthy Rao, B.Sc.Agr.: bionomics of sugarcane and rice pests and
their control; white fly pests of cultivated crops
K. Ramasubbaiah, B.Sc.Agr., M.Sc.Agr.: systemic insecticides

Agricultural College

Bapatla, Guntur District

B. Appalanaidu, M.A., M.Sc., Ph.D., F.B.S., *Principal*
I. Sambasivarao, M.Sc.Agr., *Agronomist and Professor of Agriculture*
V. V. K. Sastry, B.Sc.Hons., M.Sc., A.R.I.C., *Lecturer in Chemistry*
N. Raghavarao, M.Sc.Agr., F.R.E.S., *Lecturer in Entomology*
A. Perraju, B.Sc.Agr., M.Sc.Agr., *Lecturer in Entomology*
K. Rammohan Rao, B.Sc.Agr., M.Sc.Agr., *Lecturer in Entomology*
A. Butcheswara Rao, B.Sc.Agr.: bionomics and control of rice stem borer
G. Pushpavani, B.Sc.Agr., M.Sc.Agr.: bionomics and control of insect pests of
millets, vegetables and jasmine

BEE-KEEPING SCHEME (J.C.A.R.)

Tanuku, Godavari District

K. Lakshminarayana, B.Sc.Agr., M.Sc.Agr.

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V. Gurumurthi, G.M.V.C., *Disease Investigation Officer (Poultry)*
J. Venkatanarayana, B.V.Sc., *Disease Investigation Officer (Pigs)*
Ch. Govinda Rao, G.M.V.C., *Disease Investigation Officer (Ducks)*
Mohd. Muniruddin Khan, B.V.Sc., *Research Officer*
P. Pandu Ranga Rao, B.V.Sc., *Research Officer*

Superintendents of Farms

P. Ranga Reddy, G.B. & O.V.C., *Superintendent, Cattle Breeding and Dairy Farm, Rajendranagar, Hyderabad*
V. Ramachandran, B.V.Sc., *Superintendent, Central Poultry Farm, Suroornagar, Hyderabad*
S. Srinivasa Rao, B.V.Sc., *Superintendent, Sheep Farm, Penukonda, Ananthapur District*
V. Dasaratharamiah, G.M.V.C., *Superintendent, Government Livestock Farm, Palamaner, Chittoor District*
S. C. Sundarachari, G.M.V.C., *Superintendent, Cattle-cum-Dairy Farm, Kakinada, East Godavari District*
P. Bapa Reddy, B.V.Sc., *Officer-in-Charge, Aseel Breeding Scheme, Kakinada, East Godavari District*
T. Rama Rao, G.M.V.C., M.S., *Superintendent, Poultry Research Station, Kakinada, East Godavari District*
P. Krishna Reddy, G.M.V.C., *Superintendent, Government Livestock Farm, Lam, Guntur*
L. Motisingh, G.M.V.C., *Superintendent, Government Livestock Farm, Banavasi, Kurnool District*

INDIA

- T. Ramahrahmiah, G.M.V.C., *Superintendent, Government Livestock Farm, Mahanandi, Kurnool District*
K. S. Reddy, G.B.V.C., *Superintendent, Sheep Breeding Farm, Mahaboobnagar*
T. S. Ayyaswamy, G.M.V.C., I.D.D., *Superintendent, Government Dairy Farm, Vizag.*
K. Ramachandra Reddy, G.M.V.C., *Poultry Officer, Regional Poultry Farm, Government Dairy Farm, Vizag.*
N. V. Bhaskar, B.V.Sc., *Poultry Officer, Regional Poultry Farm, Patancheru, Medak District*
M. S. R. Anjancyulu, G.M.V.C., *Superintendent, Cattle-cum-Dairy Farm, Pedavegi, West Godavari District*

University College of Veterinary Science and Animal Husbandry Hyderabad

- M. Ahamed Hussain, G.M.V.C., *Principal*
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V. N. Pargaonkar, G.B.V.C. (Patna), D.T.V.Sc. (Izat.), M.S., *Reader in Pathology*
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C. Venkateswara Rao, G.M.V.C., B.V.Sc., M.Sc. (Madr.), M.S., *Reader in Animal Husbandry*
R. S. Raghavan, B.V.Sc. (Osm.), M.S., *Lecturer*
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D. Bhim Reddy, B.V.Sc. (Osm.), F.R.C.V.S.

Andhra Veterinary College Tirupathi

- P. S. Rajulu, B.V.Sc., M.S., *Principal*
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Y. Veeriah, B.Sc.Agr., B.Ed., *Lecturer in Agronomy*
K. Venkarcddy, B.V.Sc., M.S., *Lecturer in Animal Husbandry*
G. Venkataratnam, B.V.Sc., M.S., *Lecturer in Animal Hygiene*
B. Sambamurtu, B.V.Sc., *Lecturer in Bacteriology*

School of Veterinary Science and Animal Husbandry Visakhapatnam

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INDIA

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B. R. Halder, G.V.Sc., *Officer-in-Charge, Humpsore Eradication Scheme*
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K. B. Mohan Lal, M.Sc., I.F.S., *Conservator of Forests*

R. M. Das, B.Sc., A.I.F.C., *Consercator of Forests*

B. N. Das, B.Sc., A.I.F.C., *Forest Utilization Officer*

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Bihar Agricultural College

P.O. Sabour (Bhagalpur)

R. S. Roy, M.Sc. (Calif.), M.S.S., *Principal*

T. G. Jacob, B.Sc.Eng., *Vice-Principal and Professor of Engineering*

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B. S. Lall, B.Sc. (Corn.), M.Sc., Ph.D., *Professor of Entomology*

S. S. P. Sinha, M.Sc., Ph.D., *Assistant Professor of Zoology and Entomology*

HORTICULTURE DIVISION

V. S. Chhonkar, B.Sc.Agr., M.Sc.Agr., Ph.D. (Ohio), *Professor of Horticulture*

N. B. Syamat, B.Sc.Agr., M.Sc.Hort. (Calif.), *Assistant Professor of Horticulture*

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Jai Narain Sinha, M.Sc.Agr., Ph.D., *Assistant Professor of Agronomy*

K. N. Srivastava, M.Sc.Agr., *Assistant Professor of Agronomy*

K. P. Sinha, B.Sc.Agr., I.D.D., *Assistant Professor of Animal Husbandry*

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B. D. Sinha, B.V.Sc. & A.H., *Assistant Professor, Veterinary*

PLANT PATHOLOGY DIVISION

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A. K. Dutta, M.Sc.Agr., *Assistant Professor of Mycology*

P. P. Mehta, B.Sc.Agr., Ph.D., *Assistant Professor of Mycology*

AGRICULTURAL EXTENSION DIVISION

K. N. Singh, M.Sc., Ph.D., *Professor of Agricultural Extension*

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INDIA

BOTANY DIVISION

A. B. Saran, M.Sc.Bot., *Professor of Botany*

CHEMISTRY DIVISION

B. P. Srivastava, M.Sc.Agr., M.S., *Assistant Professor of Chemistry*

Regional Agricultural Research Institute Dhole

AGRONOMICAL SECTION

H. K. Roy, B.Sc.Agr., M.S., *Assistant Agronomist*

S. N. Ojha, M.Sc.Agr., *Senior Research Assistant*

H. Singh, B.Sc., B.I., *Senior Research Assistant*

AGRICULTURAL ENGINEERING SECTION

S. N. Srivastava, B.Sc.Agr., M.Sc., *Assistant Agricultural Engineer*

S. C. Banerjee, B.Sc., B.Tech.Hons., I.I.T. (Kharagpur), *Senior Testing Assistant*

BANANA RESEARCH STATION

Hajipur

R. K. Singh, M.Sc.Agr., *Banana Specialist*

R. K. Pathak, B.Sc., *Senior Research Assistant*

CEREAL SECTION

J. Mandal, B.Sc.Agr., M.S. (Okla.), *Senior Research Assistant*

CO-ORDINATED MAIZE BREEDING

T. D. Jha, B.Sc.Agr., A.I.A.R.I., *Assistant Maize Breeder*

P. N. Sinha, B.Sc., *Senior Research Assistant*

S. K. Gupta, M.Sc., *Senior Research Assistant*

HORTICULTURE SECTION

V. J. Nigam, M.Sc.Agr., *Assistant Horticulturist*

S. A. Khan, M.Sc.Agr., *Senior Research Assistant*

MAIZE AND MILLET SECTION

R. Singh, M.Sc.Agr., Ph.D. (Minn.), *Maize and Millet Specialist*

K. K. Srivastava, B.Sc., *Senior Research Assistant*

OILSEEDS SECTION

U. C. Sinha, M.Sc., *Senior Research Assistant*

PULSES SECTION

S. K. Chowdhury, M.Sc. (Pat.), *Assistant Pulse Specialist*

RICE SECTION

S. N. Ojha, M.Sc. (Pat.), *Assistant Rice Specialist*

R. S. Sharma, M.Sc., *Senior Research Assistant*

SOIL CHEMISTRY SECTION

S. M. Umar, B.Sc.Agr., A.I.A.R.I., *Assistant Soil Chemist*

STATISTICAL SECTION

M. S. Ahmad, B.A., *Senior Statistical Assistant*

TUBER RESEARCH STATION

Siwan

S. N. Srivastava, M.Sc., *Senior Research Assistant*

INDIA

VEGETABLE RESEARCH STATION Musheri

S. N. Singh, M.Sc.Agr., *Vegetable Specialist*

Ranchi Agricultural College Kanki, Ranchi

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M. N. Shahani, M.Sc.Agr., M.S., *Assistant Professor of Agronomy*

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BOTANY

Ram Prakash, M.Sc.Agr., M.S., *Professor of Botany*
D. P. Srivastava, M.Sc.Agr., Ph.D., *Assistant Professor of Botany*

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S. M. Alam, B.Sc.Agr., M.S.Agr., M.S.Agr.Eng., *Professor of Engineering*
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PLANT PATHOLOGY

R. S. Singh, M.Sc.Agr., Ph.D., *Assistant Professor of Plant Pathology*

ENTOMOLOGY

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HORTICULTURE

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ANIMAL HUSBANDRY

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B. N. Singh, M.S., Ph.D., *Assistant Professor of Social Science*

Tirhut College of Agriculture

Dholi, Pusa

S. K. Mukerji, M.Sc. (Iowa), Dip.Agr. (N.Z.), *Principal and Regional Director: agronomical work*
U. N. Verma, M.Sc., Ph.D., A.I.A.R.I., *Vice-Principal and Professor of Botany: cytogenetical and plant breeding work*
A. R. Prasad, B.Sc. (Pat.), B.Sc.Agr. (Agra), M.Sc.Agr. (Q'I'd.), *Assistant Professor of Entomology*

INDIA

S. N. Srivastava, B.Sc.Agr. (Pat.), M.Sc.Agr.Eng. (Dunelm), *Assistant Professor of Agricultural Engineering*

Regional Agricultural Research Institute Patna

P. Sinha, M.Sc., A.I.A.R.I., Ph.D., D.I.C., *Regional Director*

BOTANY SECTION

- S. K. Roy, B.Sc.Agr., Ph.D.: rice breeding
L. Jones, B.Sc.: rice breeding
H. N. S. Ambastha, M.Sc.Agr.: breeding of wheat, barley and oats
S. Prasad, M.Sc.: pulses breeding
K. S. Asthana, M.Sc.: oilseeds breeding
K. C. Shukla, B.Sc.Agr., I.H.D., A.I.A.R.I.: improvement of gardens and orchards
B. P. Sinha, M.Sc.Agr.: pomology

AGRONOMY SECTION

- N. Singh, M.Sc.Agr.: agronomy of field crops
E. Haque, B.Sc.Agr., A.I.A.R.I.: water requirements of crops

AGRICULTURAL ENGINEERING SECTION

- H. N. Pandey, B.Sc.Agr., B.Sc.Agr.Eng., Ph.D.: water requirements of crops
M. P. Sinha, B.Sc.Agr., B.Sc.Agr.Eng., Ph.D.: agricultural implements research
H. N. Bakshi, B.Tech.: farm implements and power
K. N. Joseph, B.Sc.Agr.Eng.: agricultural implements and irrigation equipment
H. Prasad, B.Sc.Agr., M.Sc.Agr.Eng.: agricultural implements

FISHERIES SECTION

- S. Sharma, B.Sc., M.S.: fisheries research

STATISTICAL SECTION

- M. N. Alam, M.Sc.: statistical study of field experimental data

Regional Agricultural Research Institute

Sabour (Bhagalpur)
R. S. Roy, B.Sc., M.S., A.M.S.S., *Regional Director*

AGRONOMY SECTION

- S. Nezamuddin, M.Sc.Agr., M.Sc.Hort.: agronomy of field crops
R. A. Singh, B.Sc.Agr.: agronomy of field crops
B. Dayal, M.Sc.Agr.: soil conservation research
M. N. Mallik, B.Sc.Agr., A.I.A.R.I.: water requirements of crops
P. K. Bose, B.Sc.Agr., A.I.A.R.I.: water requirements of crops

BOTANY SECTION

- M. P. Singh, M.Sc.: improvement of tubers, chillies, etc.
A. Narayan, M.Sc., Ph.D.: oilseeds breeding
A. K. Bose, B.Sc.Agr., A.I.A.R.I.: maize and millet breeding
G. M. Mishra, M.Sc.Agr., Ph.D.: vegetable breeding
N. P. Tiwari, B.Sc.Agr., A.I.A.R.I., Ph.D.: rice breeding
P. Sanyal, M.Sc., D.Phil., A.I.A.R.I.: cotton breeding
R. N. Bhargava, M.Sc.Agr.: pulses breeding

AGRICULTURAL CHEMISTRY SECTION

- P. B. Bhattacharyya, M.Sc., A.I.A.R.I.: soil science and agricultural chemistry
M. A. Ali, B.Sc.Agr., A.I.A.R.I.: soil microbiology

INDIA

D. C. Sharma, B.Sc.Agr.: soil physics
L. L. Srivastava, B.Sc.Agr., A.I.A.R.I.: soil biochemistry
S. D. Sinha, M.Sc., A.I.A.R.I.: soil survey
A. B. Lal, B.Sc.Agr., A.I.A.R.I.: soil survey
P. P. Jha, B.Sc.Agr., A.I.A.R.I., Ph.D.: soil survey
S. Sahaya, M.Sc.: soil survey (geology)
B. S. Banerjee, B.Sc.Agr., A.I.A.R.I.: soil testing

ENTOMOLOGY SECTION

M. N. Sinha, B.Sc.Agr., M.Sc.: entomology

PLANT PATHOLOGY SECTION

S. L. Sharma, M.Sc.: plant pathology
G. P. Singh, M.Sc.Agr., M.Sc., Ph.D.: plant pathology
D. K. Singh, M.Sc.: plant pathology (fungus disease of maize)
H. H. Prasad, M.Sc.: plant pathology (wilt disease)

AGRICULTURAL ENGINEERING SECTION

T. K. MUKHERJEE, B.Sc.Agr.Eng.: agricultural implements research

HORTICULTURE SECTION

P. C. Mallik, M.Sc.: horticultural research
U. P. Verma, B.Sc., Dip. Fruit Res.: fruit preservation
R. K. Sahay, M.Sc.Agr.: physiology of horticultural crops
T. S. N. Singh, B.Sc., Dip. Hort.: improvement of orchards
B. N. Verma, B.Sc.Agr.: horticulture
S. P. Verma, B.Sc.Agr.: pests of horticultural crops
B. P. Chakravarty, B.Sc.Agr., A.I.A.R.I., Ph.D.: diseases of horticultural crops

STATISTICS SECTION

G. P. Singh, M.A.: design and analysis of agricultural experiments
A. Prasad, M.A.: statistical analysis of experimental data

Regional Agricultural Research Institute

Kanki, Ranchi
S. C. Mandal, B.Sc., B.Sc.Agr., M.Agr.Sc., *Regional Director*

AGRONOMY SECTION

S. K. Sinha, M.Sc.Agr.: agronomy of field crops

AGROSTOLOGY SECTION

B. N. Chatterjee, B.Sc.Agr., Ph.D.: agrostology

AGRICULTURAL ECONOMICS SECTION

C. P. Shastri, M.Sc.Agr., LL.B., Ph.D.: agricultural economics

BOTANY SECTION

U. K. Rai, M.Sc., D.Phil.: oils and pulses breeding
J. K. Chandra, B.Sc.Agr., A.I.A.R.I.: rice breeding
R. N. Srivastava, M.Sc., A.I.A.R.I.: oilseeds breeding

AGRICULTURAL CHEMISTRY SECTION

H. Sinha, M.Sc., Ph.D.: soil fertility
C. R. Prasad, M.Sc.Agr.: soil chemistry

CROP PHYSIOLOGY SECTION

M. S. S. Rao, M.Sc.Agr., Ph.D.: physiology of field crops

INDIA

ENTOMOLOGY SECTION

V. G. Prasad, M.Sc.Agr., Ph.D.: research on crop pests

PLANT PATHOLOGY SECTION

S. M. Ghaffaran, B.Sc.Agr., A.I.A.R.I.: research on crop diseases

HORTICULTURE SECTION

R. B. Singh, M.Sc., Ph.D.: citrus crops

STATISTICS SECTION

J. P. Pandey, M.Sc.: statistical analysis of experimental data

Sugarcane Research Institute

Pusa (Bihar)

C. Thakur, M.Sc., Ph.D., *Deputy Director*

AGRONOMY SECTION

R. N. Sahay, M.Sc.Agr.: agronomy of sugarcane crop

T. K. Ghosh, B.Sc.Agr., A.I.A.R.I., Ph.D.: agronomy of sugarcane crop

BOTANY AND PHYSIOLOGY SECTION

S. W. Akhtar, B.Sc.Agr., M.Sc., Ph.D.: sugarcane breeding

D. N. Mishra, B.Sc.Agr., A.I.A.R.I., M.Sc.: study of wild relations of sugarcane

V. Pandey, M.Sc.Agr., Dr.Nat.Sc.: sugarcane physiology

CHEMISTRY SECTION

M. Farooque, B.Sc., A.I.A.R.I.: sugarcane chemistry

P. K. Roy, M.Sc., D.I.C., A.R.I.C.: sugarcane chemistry

A. K. S. Verma, B.Sc., A.I.A.R.I.: study of sugarcane soils

O. P. Mittal, M.Sc., A.I.A.R.I.: trace elements studies

ENTOMOLOGY SECTION

Z. A. Siddiqui, M.Sc.: study and control of sugarcane pests

S. P. Verma, B.Sc.Agr.: study and control of sugarcane pests

MYCOLOGY AND PATHOLOGY SECTION

R. K. Singh, M.Sc., Ph.D., D.I.C.: study and control of sugarcane diseases

R. N. P. Srivastava, M.Sc.Agr.: study and control of sugarcane diseases

A. Ganguly, B.Sc., Ph.D.: study and control of wilt diseases of sugarcane

STATISTICS SECTION

P. N. Chowdhury, M.Sc.: design and analysis, field experiments

R. C. Acharya, M.A.: design and analysis, field experiments

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 R. L. Mehrotra, G.B.V.C., *Research Officer (Tuberculosis)*
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 S. Murti, G.B.V.C., *Assistant Research Officer*

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College of Agriculture

Junagadh. Tel.: 93. 'Grams: Agricoll

PLANT PATHOLOGY

M. K. Desai, M.Sc.Agr., *Principal and Plant Pathologist*: breeding for disease resistance and control of diseases of field crops
H. U. Joshi, B.Sc.Agr., A.I.A.R.I., *Agricultural Officer*: mosaic and other viruses of *Vinca rosea* and bacterial blight of paddy

AGRICULTURAL CHEMISTRY AND SOIL SCIENCE

H. G. Pandya, Ph.D., *Agricultural Chemist and Soil Specialist*: soil fertility and agricultural chemistry
H. J. Rajani, M.Sc.Agr., Ph.D., *Assistant Soil Specialist*: composts, farmyard manure and methods of soil analysis
N. H. Haria, B.Sc.Agr., A.I.A.R.I., *Agricultural Officer*: availability of nutrients in soil during crop growth
M. V. Kanzaria, B.Sc.Agr., A.I.A.R.I., *Lecturer*: soil fertility, continuous manuring and cropping

AGRICULTURAL ENTOMOLOGY

R. M. Patel, M.Sc.Agr., Ph.D. (Cantab.), *Agricultural Entomologist*: population survey; biology and control of insect pests and rats

AGRONOMY

A. S. Patel, B.Sc.Agr., A.I.A.R.I., *Agronomist and Sugarcane Specialist*: response of wheat to sulphate of ammonia and farmyard manure
B. H. Bhatt, B.Sc.Agr., A.I.A.R.I., *Cotton Superintendent*: agricultural extension

HORTICULTURE

H. D. Amin, M.Sc.Agr., A.C.F.T.R.I., *Assistant Horticulturist*: description, classification and identification of mango varieties and dehydration of fruits

AGRICULTURAL BOTANY

D. S. Chavda, B.Sc.Agr., A.I.A.R.I., *Assistant Professor*: plant breeding (cotton)
S. N. Joshi, B.Sc.Agr., A.I.A.R.I., *Assistant Oilsseeds Specialist*: hybrid vigour in intervarietal cotton crosses; evaluation and description of peas for economic value in breeding
R. H. Dave, B.Sc.Agr., A.I.A.R.I., *Lecturer*: inheritance of rust resistance and other characteristics in wheat crosses

ANIMAL HUSBANDRY

D. D. Makdani, M.Sc.Agr., *Assistant Professor*: factors affecting milk production in Kankrej cattle

Institute of Agriculture

Anand. Tel.: 29. 'Grams: Agrisearch

M. D. Patel, M.S., Ph.D., *Professor of Animal Husbandry and Director*: inheritance studies of Kankrej cattle
J. R. Patel, M.S., Ph.D., *Professor of Cattle Management and Dairy Farming, and Principal, Dairy Science College*: genetic studies of cellular antigens
U. G. Patel, M.Sc.Agr., Ph.D., *Professor of Animal Husbandry*: quantitative genetic studies in some Indian breeds of cattle
T. D. Patel, M.Sc.Agr., Ph.D., *Professor of Dairy Technology*: flavour changes in sterile concentrated milk
S. H. Vyas, M.Sc.Agr., Ph.D., *Assistant Professor of Dairy Technology*: gestation period in Kankrej cattle

INDIA

- R. M. Patel, M.Sc., Ph.D., *Professor of Agricultural Botany, and Principal, B.A. College of Agriculture*: improvement of vegetables, spices and sorghum forage
H. A. Joshi, M.Sc., M.S., *Assistant Professor of Botany*: agricultural ecology
R. H. Patel, M.Sc.Agr., M.S., *Assistant Research Officer*: improvement of vegetables and sorghum forage
C. J. Patel, M.Sc.Agr., Ph.D., *Professor of Agronomy, and Principal, Gramsevak Training Centre*: effect of fertility and cultural practices on certain cereals and oilseeds
D. P. Patel, M.Sc.Agr., *Senior Lecturer in Agronomy*: effect of fertility and cultural practices on oilseeds
R. R. Patel, M.Sc.Agr., *Lecturer in Agronomy*: effect of fertility and cultural practices on certain cereals and tobacco crops
G. J. Patel, M.Sc.Agr., Ph.D., *Research Officer, B.T.R.S.*: improvement of tobacco and vegetable crops
B. V. Mehta, M.Sc., Ph.D., *Professor of Agricultural Chemistry and Soil Science*: trace elements and salt tolerance of crops
K. A. Patel, M.Sc.Agr., *Lecturer in Agricultural Chemistry*: chemistry of bidi tobacco
M. V. Desai, M.Sc.Agr., Ph.D., *Professor of Plant Pathology and Bacteriology*: fungi of Anand and diseases of crop plants
A. J. Patel, M.Sc.Agr., M.S., *Assistant Professor of Plant Pathology*: virus diseases
M. R. Trivedi, M.Sc., *Lecturer in Microbiology*: microbiology of dairy products
B. M. Patel, M.S., Ph.D., *Research Officer, W.R. Animal Nutrition Centre*: nutrition of farm animals
P. C. Shukla, M.Sc.Agr., *Assistant Research Officer*: animal nutrition and dairy science
G. H. Menon, M.V.Sc., *Assistant Research Officer*: nutrition and physiology of animals
A. S. Patel, M.Sc.Agr., Ph.D., *Research Officer (Agrostology)*: breeding and production of grasses
N. C. Buch, M.S., Ph.D., *Professor of Veterinary Science*: physiology of reproduction
G. F. Mithuji, B.Sc.Vet., *Assistant Poultry Research Officer*: care and management of poultry
A. M. Majmudar, Ph.D., *Professor of Horticulture (Nutrition)*: cultural and water requirements of vegetable crops
R. S. Amin, M.Sc.Agr., M.S., *Assistant Research Officer in Horticulture*: propagation of horticultural plants
H. K. Patel, B.Sc.Agr., Ph.D., *Professor of Entomology*: crop pest control problems of applied entomology
R. C. Patel, M.S., Ph.D., *Assistant Research Officer*: crop pest control problems of applied entomology
N. K. Desai, M.Sc.Agr., *Professor of Agricultural Economics*: farm management and agricultural prices
C. H. Babaria, M.Sc.Agr., *Lecturer in Dairy Economics*: farm management

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Agricultural College and Research Institute

Vellayani. Tel.: 3021

L. S. S. Kumar, B.Sc.Hons. (Lond.), M.Sc. (Lond.), D.I.C., A.R.C.S., *Head of the Institution, Dean and Additional Director of Agriculture (Research)*

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E. J. Thomas, M.Sc.Stat., *Senior Lecturer: agricultural statistics*

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INDIA

K. Srinivasan, B.Sc.Bot., B.Sc.Agr., M.Sc.Agr., D.H., *Senior Lecturer*:
agricultural research
Mary Korah, M.Sc.Bot., Ph.D. (Cal.), *Senior Lecturer*: cytogenetics

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H. S. Money, M.Sc. (Trav.), *Assistant Soil Chemist*

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R. Iyer, M.Sc.Chem., *Senior Lecturer*

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K. V. Joseph, M.Sc.Zool., *Head of Division and Entomologist to Government*: toxicity of insecticides to common insect pests of South India

M. R. G. Nair, M.Sc.Zool., *Senior Lecturer*

G. R. Iyer, M.Sc.Zool., A.I.A.R.I., M.S., *Senior Lecturer*: biological control of insect pests with special reference to microbial control

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M. R. Menon, M.Sc.Bot., *Research Officer*: virus pathology and diseases of banana

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Kerala Veterinary College

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College of Veterinary Science and Animal Husbandry and Livestock Research Institute

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S. P. Arora, B.V.Sc., A.H. & A.I., *Assistant Professor, Animal Nutrition*

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R. K. Handa, B.V.Sc. & A.H., *Assistant Research Officer*
B. K. Tikkoo, B.Sc.Vet.Hons., *Assistant Research Officer (Sheep and Goats)*
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Sant Singh, M.Sc. Chem., Ph.D. (Lond.), *Reader in Agricultural Chemistry*
M. S. Pavgi, M.Sc.Agr.Bot., A.I.A.R.I., Ph.D. (Wis.), *Reader in Mycology and Plant Pathology*
K. Kumar, M.Sc.Bot., *Lecturer in Plant Physiology*
K. Das, M.Sc., Ph.D. (Minn.), *Lecturer in Genetics and Plant Breeding*
S. P. Mukherjee, M.Sc.Zool., LL.B., Ph.D. (Ban.), *Lecturer in Agricultural Entomology*
G. S. Lavania, M.A., M.Sc.Agr., Ph.D. (Agra), *Lecturer in Agricultural Economics*
U. S. Singh, M.Sc.Agr.Bot., M.S., *Lecturer in Agriculture*
Jai Ram Singh, M.Sc.Agr.Bot., Ph.D. *Lecturer in Horticulture*
Ram Murat Singh, M.Sc., *Lecturer in Physics and Mathematics*
N. M. Misra, M.Sc.Agr., *Lecturer in Agronomy*
N. K. Jain, M.Sc.Agr., Ph.D. (III), *Lecturer in Agronomy*
V. P. Tewari, M.Sc.Agr., M.S. (III), *Lecturer in Plant Pathology*
R. A. Singh, M.Sc.Agr., *Lecturer in Plant Pathology*
V. B. Bhatnagar, M.Sc.Agr., Ph.D. (Ban.), *Lecturer in Crop Physiology*
S. B. Lal Gupta, M.Sc.Agr., Ph.D. (Ban.), *Lecturer in Agricultural Economics*
A. N. Sharma, M.Sc.Agr., Ph.D. (Agra), *Lecturer in Agricultural Economics*
Mahatim Singh, M.Sc.Agr., D.Sc. (Tokyo), *Lecturer in Agronomy*
R. N. Kaul, B.Sc.Agr.Eng., Dip.Extn., *Lecturer in Agricultural Engineering*
T. P. Singh, B.Sc.Agr.Eng., *Lecturer in Agricultural Engineering*
M. L. Gupta, M.Sc.Agr., *Lecturer in Agricultural Chemistry*
V. M. Mandokhot, M.V.Sc. & A.H., *Lecturer in Animal Husbandry and Veterinary Science*
D. P. Kathuria, M.Sc.Agr., *Lecturer in Animal Husbandry and Dairying*
V. N. Singh, M.Sc.Agr., *Lecturer in Plant Pathology*
B. D. Pandey, M.Sc.Agr., *Instructor in Horticulture*
K. C. Nag, M.Sc.Agr., *Instructor in Agricultural Entomology*
R. P. Srivastava, M.Sc.Agr., *Instructor in Agricultural Entomology*
A. K. Jalali, M.Sc.Agr., *Instructor in Plant Pathology*

UNIVERSITY OF BOMBAY

Department of Economics

M. L. Dantwala, M.A., *Professor of Agricultural Economics and Director*

INDIA

C. H. Shah, B.Com., Ph.D., *Reader in Agricultural Economics*

P. R. Baichwal, M.A., *Lecturer in Agricultural Economics*

A. C. Shah, M.A., *Research Investigator*

V. M. Rao, M.A., *Research Investigator*

T. K. Meti, M.A., *Research Investigator*

DELHI UNIVERSITY

Delhi-6. Tel.: 228121

P. Maheshwari, D.Sc., *Professor*: plant embryology

B. M. Johri, D.Sc., *Reader*: experimental morphology and embryology of angiosperms

S. L. Tandon, Ph.D., *Reader*: polyploidy in relation to floriculture

V. P. Singh, Ph.D., *Reader*: algae in relation to pisciculture

H. Y. Mohan Ram, Ph.D., *Reader*: experimental morphology

S. C. Maheshwari, Ph.D., *Reader*: plant physiology

K. N. Saxena, M.Sc., D.Phil., *Reader*: physiological relationship between insect-pests and host-plants

UNIVERSITY OF GAUHATI

Department of Agricultural Botany

N. Das, M.Sc., Ph.D., *Reader and Head*

UNIVERSITY OF GORAKHPUR

Department of Botany

K. S. Bhargava, M.Sc., D.Phil., Ph.D., *Professor and Head*

U. N. Chatterji, D.Phil., D.Sc., *Professor*

UNIVERSITY OF JABALPUR

Department of Agriculture

D. S. Nag, M.A., B.Com., Ph.D., *Reader*: post-graduate studies and research in economics

S. S. Gour: pattern of rural employment in the Upper Narbada Valley

R. L. Kashyap: effect of the application of some trace elements as foliar spray with varying levels of nitrogen and phosphoric acid on growth, fruit set, yield and quality of brinjal

UNIVERSITY OF KERALA

Faculty of Science

A. Abraham, M.A., M.Sc., Ph.D., F.A.Sc., *Professor of Botany and Dean*

P. K. Sadananda Panicker, M.Sc., *Senior Research Officer-in-Charge*: Tuber Crops Experiment Station, Trivandrum

PUNJAB UNIVERSITY

Department of Zoology

G. P. Sharma, M.Sc.Hons., Ph.D. (Pb.), Ph.D. (Edin.), F.A.Z., F.Z.S.I., F.R.M.S., F.Z.S., *Professor and Head*

G. L. Arora, M.Sc.Hons., Ph.D. (Lond.), D.I.C. (Lond.), F.R.E.S., F.E.S.I., F.A.Z., *Reader in Entomology*

H. L. Arora, M.Sc.Hons., Ph.D. (Stanford), *Reader in Fisheries*

S. R. Bawa, M.Sc.Hons., Ph.D.: cytochemistry and ultrastructure of spermatogenesis

R. D. S. Bhatnagar, M.Sc.Hons., Ph.D. (Sask.): insect morphology

B. L. Gupta, M.Sc.Hons.: animal germ-cells

INDIA

R. Parshad, M.Sc.Hons., Ph.D.: chromosome behaviour
R. C. Satija, M.Sc.Hons., Ph.D. (Dunelm), F.R.E.S.: nervous system
B. N. Sud, M.Sc.Hons., Ph.D. (Pb.), D.Phil. (Oxon.): cytochemistry
H. S. Vasisth, M.Sc.Hons., Ph.D.: biology

Department of Botany

P. N. Mehra, D.Sc., F.N.L., *Professor and Head*
R. S. Chopra, M.Sc.Hons., *Reader*
K. S. Thind, Ph.D., F.A.Sc., *Reader*
T. N. Khoshoo, Ph.D.: cytogenetics
S. C. Verma, M.Sc.Hons.: cytogenetics
R. K. Grover, Ph.D.: disease control
R. S. Pathania, M.Sc.Hons.: cytotaxonomy of angiosperms
D. S. Loyal, M.Sc.Hons.: cytotaxonomy of pteridophytes
S. S. Bir, M.Sc.Hons.: taxonomy and cytology
B. R. Sharma, M.Sc.Hons.: cytotaxonomy of flowering plants

GOVERNMENT OF PAKISTAN
A. MINISTRY OF FOOD AND AGRICULTURE
AGRICULTURE DIVISION

Pakistan Secretariat, Rawalpindi. Tel.: 3481/168. 'Grains: Agripak.

Mohammed Afzal, S.Pk., B.Sc.Agr., A.I.C.T.A., *Agricultural Development Commissioner*: advisory work on agricultural problems, cotton breeding
Aslam Zafar, *Deputy Agricultural Development Commissioner*: potato breeding

Pakistan Secretariat, Queensway, Karachi. Tel.: 50240. 'Grams: Agripak,
Karachi

Abdul Qadir, M.Sc.Agr. (Ph.), *Agricultural Economist*

Abdus Sattar, M.Sc. (Dac.), *Soil Scientist*

I. A. Lari, B.Sc.Agr. (Poonam), *Assistant Agricultural Engineer*

M. Amjad Hassan, Ph.D., *Agronomist*

M. A. Malik, M.Sc. (Dac.), *Officer on Special Duty (Fertilizers)*

M. Salahuddin Ahmed, B.Sc.Agr., *Officer on Special Duty*

Central Fisheries Department

Fish Harbour, West Wharf, Karachi-2. Tel.: 38621-3 and 37058. 'Grams:
Pakfish, Karachi

M. R. Qureshy, M.Sc., D.Sc. (Madr.), *Director*: systematics of fish

M. Ahmed, M.Sc. (Alig.), *Officer-in-Charge*: marine biology

A. G. Hussain, M.Sc.Hons. (Ph.), Dip.Fish.Biol., *Deputy Director*: marine
biology

M. A. Burney, B.Sc.Hons. (Alig.), *Fisheries and Gear Technologist*: marine
biology

M. U. Islam, M.Sc., *Deputy Director*: marine biology

EAST WING OF CENTRAL FISHERIES DEPARTMENT

Marine Fisheries, Agrabad, Chittagong, East Pakistan. Tel.: 6441. 'Grams:
Pakfish, Chittagong

S. M. Monirul Islam, M.Sc. (Cal.), B.Sc. (Wash.), *Deputy Director*: fisheries
biology

Shamsul Haque Chowdhury, M.Sc. (Dac.), Dip.Fish.Tech., *Fisheries Technolo-*
gist: fisheries biology

Co-operation and Marketing Department

Pakistan Secretariat, Queensway, Karachi

S. A. Hussain, B.Com., Ph.D. (Lond.), *Co-operation and Marketing Adviser*:
advisory work on problems of marketing, agricultural produce and co-opera-
tion

Israrul Haq, L.V.P., Ph.D. (R'dg.), *Deputy Co-operation and Marketing Adviser*:
(Wool): grading and marketing of wool and wool products

A. M. Chaudhri, B.Sc., L.V.P. (Ph.), *Senior Marketing Officer*: grading and
marketing of hides and skins

Badruddin Ahmed, B.Sc., M.Sc., LL.B., *Marketing Officer*: grading and market-
ing of livestock and livestock products

Habibur Rahman, B.Sc. Hons., M.Sc., *Marketing Officer*: grading and market-
ing of food and cash crops

M. Mumtaz Ali, M.Sc., *Senior Marketing Officer*: grading and marketing of food
and cash crops

Mohammed Azam Khan Mahmud, L.V.P., *Senior Wool Grading Officer*:
grading and marketing of wool and wool products

S. Noor Ahmed, B.Sc., *Senior Wool Testing Officer*: testing and analysis of wool

PAKISTAN

CENTRAL CONTROL LABORATORY, LYALLPUR

Sirajuddin, M.Sc., *Officiating Chief Chemist*: analysis of agricultural commodities

Department of Agricultural Economics and Statistics

25 Khanna Road, Rawalpindi. Tel.: 2598. 'Grams: Dages

M. A. Hussain, M.Sc.Agr., Ph.D. (Edin.), *Director*: problems of rural economics, statistics of agricultural productions

M. A. Siddiqui, M.A., Dip.Agr., *Farm Management Economist*: farm management problems

Mrs. M. Akhtar, M.A., Ph.D., *Deputy Director*: farm management problems

Q. G. Kibria, M.Agr., M.S. (Kan.), *Deputy Director*: farm management

S. M. Ishaque, M.A. Econ., M.A. Stat., *Statistician*

W. D. Khan, M.Sc.Agr., *Deputy Director*: agricultural production

Department of Animal Husbandry

Chaklala, Rawalpindi

Brig. M. Z. Khan, *Animal Husbandry Commissioner*

PAKISTAN ANIMAL HUSBANDRY RESEARCH INSTITUTE

Near Railway Station, Peshawar, West Pakistan

M. M. Huq, B.V.Sc., G.M.V.C., *Officer-in-Charge*: pathology and bacteriology; virus diseases

A. Aziz Khan, G.B.V.C., *Assistant Research Officer*: biological products

E. H. Siddiqui, M.Sc., G.B.V.C., *Assistant Research Officer*: parasitology

M. Anwar A. Qureshi, M.Sc., L.V.P., *Research Officer (Pathology and Bacteriology)*: mice breeding

M. Jamil, M.Sc., L.V.P., D.V.M., *Research Officer*: biological products

M. R. Bhuiya, G.V.Sc. (Cal.), *Assistant Research Officer*: poultry husbandry

M. Saleem, G.B.V.C. (Pata), I.D.D. (Bang.), *Assistant Research Officer*: animal nutrition

M. Y. Ansari, G.B.V.C., *Assistant Research Officer*: bacteriology and pathology

S. U. Shah, G.B.V.C., *Assistant Research Officer (Hides and Skins)*

PAKISTAN ANIMAL HUSBANDRY RESEARCH INSTITUTE

Bhukaitash House, Comilla, East Pakistan

M. Israil Khan, G.V.Sc. (Cal.), M.S. (Minn.), *Officer-in-Charge*: biological products

Abdullah Yusuf Ali, G.V.Sc., *Assistant Research Officer*: animal nutrition

Ghulam Hyder, G.V.Sc. (Cal.), *Assistant Research Officer*: biological products

M. A. Quader, D.V.M.S. (Com.), *Assistant Research Officer*: pathology and bacteriology

M. H. Rahman, D.V.M.S. (Com.), *Assistant Research Officer*: animal genetics

Z. Hassan, G.V.Sc. (Cal.), *Research Officer*: animal husbandry

Department of Forests

Office of the Inspector General of Forests, Rawalpindi

M. Tasdiq Hussain, *Inspector General of Forests*

PAKISTAN FOREST INSTITUTE, PESHAWAR

Tel.: 5320. 'Grams: Pakfi

M. Habib Khan, B.Sc., A.I.F.C. Hons., Dip. S.C., *Director*: forestry research and education

G. M. Khattak, B.Sc., A.P.F.C., *Central Silviculturist*: silvicultural research

Ghulam Ullah Chaudhry, B.Sc.Agr. (Pb.), A.I.A.R.I., Ph.D. (Mich.), *Forest Entomologist*: biology and ecology of insects

PAKISTAN

S. M. Ishaq, B.A., B.Sc.Hons., M.Phys.Sc. Hons., *Forest Utilization Officer*: seasoning of timber
S. Saeed Ahmed, B.Sc.Agr., *Assistant Wood Technology Officer*: wood anatomy

PAKISTAN FOREST COLLEGE

Jail Road, Abbottabad, West Pakistan

A. H. Khan, M.Sc. (Ph.), Ph.D. (Calif.), *Forest Botanist*: mycology and pathology
A. R. Beg, M.Sc. (Pb.), *Plant Taxonomist*: taxonomy of forest plants
M. B. Zaman, M.Sc. (Cal.), Ph.D. (Birm.), *Medicinal Plants Officer*: survey and cultivation of medicinal plants
M. N. Malik, B.Sc.Agr. (Pb.), M.Sc., Ph.D. (Fla.), *Forest Chemist*: research in chemical contents of forest products
S. M. Hussain, B.Sc., *Assistant Ecologist*: ecology of forest plants

FOREST RESEARCH LABORATORY

Forest Dale, Shola Shaher, Chittagong. Tel.: 6764. 'Grams: Foresdale
M. A. K. Khalil, M.Sc. (Alig.), A.I.F.C. (Dehra Dun), *Director*: supervisory and forestry
A. B. M. Salchuddin, B.Sc. Hons., M.Sc. (Dac.), *Divisional Officer*: veneer and composite wood products
Dalip Kumar Das, M.Sc. (Dac.), *Senior Research Officer*: wood anatomy and fibre technology
M. A. Latif, M.Sc. (Dac.), *Senior Research Officer*: wood chemistry
M. Arshad Ali, M.Sc., *Economic Botanist*: systematic botany, experimental cultivation of medicinal plants
Mohammed Hussain, B.Sc. Hons., M.Sc. (Dac.), *Divisional Officer*: pulp and paper products
Mohammed Sarwat Hussain, M.Sc. (Alig.), *Divisional Officer*: wood preservation and wood chemistry
Omar Ali, B.Sc. Hons., M.Sc., *Divisional Officer*: seasoning and timber physics
Sheikh Farhad Ali, B.Sc. (Cal.), B.Sc.Eng. (Dac.), *Divisional Officer*: wood working and engineering problems
Tarikul Alam, M.Sc., *Assistant Botanist*: experimental forest cultivation

Department of Plant Protection

Department of Plant Protection, Malir Halt, Karachi-27. Tel.: 49149.
'Grams: Locuswar
Taskhir Ahmad, T.Pk., B.Sc.Agr. (Pb.), Ph.D. (Cantab.), *Director*: insect toxicology and ecology of locusts
Hafiz Manzoor Abbas, M.Sc.Agr. (Pb.), D.I.C. (Lond.), *Officiating Director*: control and research, insect pests and diseases

AERIAL PEST CONTROL DIVISION

Fariduddin Ahmad, B.Sc.Agr. (Agra), *Aerial Pest Control Officer*: trials on insecticides, control of pests and diseases

CHEMISTRY DIVISION

A. H. M. Junaid, B.Sc.Agr. (Pb.), M.S. (Ill.), *Chemist*: chemistry and toxicology of pesticides, formulations of pesticides
Jamil Ahmad Usmani, M.Sc. (Kar.), *Assistant Chemist*: analysis of pesticides and fungicides

DESERT LOCUST RESEARCH DIVISION

Malik Akhtar, M.Sc. (Kar.), *Assistant Locust Entomologist*: investigation on desert locusts

PAKISTAN

Mohammed Hashir, B.Sc.Agr., *Assistant Locust Entomologist*: investigation on desert locusts
Sadiq Hussain, M.Sc. Hons. (Luck.), *Deputy Director*: investigation on desert locusts

FOOD STORAGE DIVISION

M. S. Anwar, B.A., *Assistant Entomologist*: biology of stored grain pests

LOCUST DIVISION

A. M. Salik, B.Sc.Agr., *Assistant Locust Entomologist*: locust control
Fazal Rahim, B.A., *Locust Technical Officer (Quetta)*: locust control
Mushtaq Ahmad, B.Sc.Agr. (Pb.), *Deputy Locust Entomologist*: locust control
Rashid Ahmad, B.Sc. Hons. (Pb.), *Locust Entomologist*: locust control

PLANNING AND DEVELOPMENT DIVISION

Agha Qamar Hasnain, M.Sc. (Agra), *Assistant Deputy Director (Technical)*: control of insect pests and diseases
A. Aziz Khan, M.Sc. (Alig.), *Assistant Director*: crash programme, model scheme
A. Hamid Khan, M.A., *Assistant Director*: requirements of plant protection equipments
Nafis Ahmad, *Assistant Director*: evaluation of reports
Shaikh Obaidullah, B.Sc.Agr. (Pb.), *Assistant Director*: locust control
U. D. Chaudhry, B.Sc.Agr., M.S. (Ariz.), *Assistant Director*: general pest control, evaluation

PLANT PATHOLOGY DIVISION

A. Ghafoor, M.Sc.Agr. (Pb.), M.S. (Calif.), *Plant Pathologist*: systematics of fungi, seed-borne diseases
Abdul Ghaffar, M.Sc. (Kar.), Ph.D. (Biru.), *Assistant Plant Pathologist*: root rot of crops, ecology of soil fungi
A. Kafi, M.Sc. (Alig.), Ph.D. (Exe.), *Assistant Mycologist*: systematics of fungi
Riaz Mirza, B.Sc.Agr. (Bom.), *Assistant Quarantine Mycologist*: plant quarantine

PLANT PROTECTION DIVISION AND NATIONAL INSECT MUSEUM

A. S. K. Ghouri, B.Sc.Agr. (Pb.), Ph.D. (McG.), *Plant Protection Entomologist*: systematics, physiological ecology, Gryllidae and Acridiidae (Orthoptera)
M. Nazir Baig, B.Sc.Agr. (Pb.), *Assistant Entomologist*: toxicology, taxonomy

PLANT QUARANTINE DIVISION

Mominuddin Ahmad, B.Sc. (Dac.), M.S. (Clemson), *Assistant Quarantine Entomologist*: plant quarantine
N. A. Aslam, M.Sc.Agr. (Pb.), Ph.D., D.I.C. (Lond.), *Assistant Quarantine Entomologist*: taxonomy of insects
S. Moinuddin, *Assistant Quarantine Entomologist*: plant quarantine
Sadiq Khan, *Assistant Quarantine Entomologist*: plant quarantine
Sher Khan, B.A. (Kar.), *Assistant Quarantine Entomologist*: plant quarantine
Tauquir Hassan Naqvi, M.Sc. (Alig.), *Assistant Quarantine Entomologist*: plant quarantine

RADIOENTOMOLOGY DIVISION

Allahdad Khan, B.Sc., *Junior Radioentomologist*: use of radioisotopes in entomology
Heshamul Haque, B.Sc.Agr., M.S. (Ohio), *Radioentomologist*: use of radioisotopes in entomology

PAKISTAN

RUSTS OF WHEAT AND BARLEY SCHEME

Syed Fakhru1 Hassan, B.Sc. (Osm.), Ph.D. (Minn.), *Senior Plant Pathologist*:
rusts of wheat and barley
Nazir Ahmad Zia, M.Sc.Agr. (Pb.), *Research Officer*: rusts of wheat and barley

SOON PEST SCHEME

Mumtaz Ali Khan, B.Sc.Agr., *Assistant Entomologist*: soon pest
S. G. Shabbir, B.Sc.Agr. (Pb.), M.S., *Entomologist*: soon pest

DEPARTMENT OF PLANT PROTECTION (EAST WING)

Sagun Bagicha, Ramna, Dacca, East Pakistan. Tel.: 3580. 'Grams: Antipest,
Dacca

Shamsul Hassan Hazarika, M.Sc. (Cal.), M.Sc. (Minn.), *Deputy Director
(Technical)*: control of insect pests and diseases

Syed Bazley Ali, M.Sc. (Cal.), M.S. (Minn.), Ph.D. (Lond.), D.I.C. (Lond.),
Plant Pathologist: systematics, physiology and genetics of fungi

S. K. Daliluddin Ahmed Khan, M.Sc., *Assistant Deputy Director (Technical)*:
control of insect pests and diseases

A. Haseeb, B.Sc., *Assistant Quarantine Entomologist*: plant quarantine

Ahdul Matin, M.Sc. (Pb.), M.S. (Clemson), *Assistant Quarantine Entomologist*:
plant quarantine

M. Amizuddin, B.A., *Assistant Quarantine Entomologist*: plant quarantine

M. Nayeemullah, B.Sc., *Assistant Quarantine Mycologist*: plant quarantine

Mrs. Shahzaman Yusuf, M.Sc. (Alig.), *Assistant Quarantine Entomologist*:
plant quarantine

Food and Agriculture Council, Pakistan

358 Bahadurabad, Karachi. Tel.: 42474. 'Grams: FaCPA

Abdul Hafiz, T.I., M.Sc.Agr., Ph.D. (Pb.), Ph.D., D.I.C. (Lond.), *Director of
Research (Agriculture)*: plant pathology, planning, coordination and evaluation
of agriculture and forestry research problems, arid zone, soil salinity

Abdul Wahid, L.V.P. (Pb.), M.S. (Calif.), *Director of Research (Animal
Husbandry)*: animal health, animal production, and fisheries research

B. A. Shami, M.Sc.Agr. (Pb.), *Plant Introduction Officer*: plant physiology and
plant introduction

Imtiaz Hussain, M.Sc.Agr. (Pb.), *Senior Scientific Officer*: plant ecology, arid
zone research, horticulture

Mufizuddin Ahmed, G.V.Sc. (Cal.), *Technical Officer (Animal Husbandry)*:
animal health, animal production and fisheries research

Wahid Hussain Mian, B.Sc. (Cal.), G.V.Sc. (Cal.), A.I.V.R.I., *Assistant Director
of Research (Animal Husbandry)*: animal health, animal production and
fisheries research

Pakistan Central Cotton Committee

Queens Road, Karachi. Tel.: 34200. 'Grams: Ruipak

M. A. A. Ansari, M.Sc. (Alig.), *Director of Research*: cotton breeding

Mohammed Aslam, M.Sc. (Pb.), Ph.D. (Minn.), *Secretary*: plant genetics,
wheat and corn breeding

Ahdul Jahbar Khan, *Research Officer (Testing)*

Aminuddin Ahmad, M.Sc. Hons. (Pb.), B.Sc. Hons. Tech. (Manc.), *Senior
Research Officer*

D. M. Sandila, B.Sc.Agr. Hons. (Sind.), *Research Officer*: spinning

H. Rehman, *Spinning Master*

I. Q. Qadri, B.Sc.Agr., *Research Officer*: physical chemistry

M. A. Farooqui, M.Sc. (Pb.), *Research Officer*: textile testing

PAKISTAN

S. M. Nawaz, B.Sc. (Pb.), Ph.D. (Manc.), *Deputy Director*: textile technology
S. Mohammad Ali, *Marketing Officer*: marketing of cotton
Tariq Hussain, *Research Officer*: X-ray

COTTON SCHEMES West Pakistan

I. K. Mithaiwala, B.Sc.Agr., *Assistant Cotton Botanist*
Inamullah Khan, *Assistant Plant Pathologist*
Mahbub Ali, Ph.D., *Cotton Botanist*
Mohammed Shafi, *Assistant Cotton Botanist*
Mohammed Shuaib, *Assistant Cotton Botanist*
Nazir Ahmed, *Assistant Cotton Botanist*
Nu Mohammed Mongat, *Assistant Cotton Botanist*
Q. H. Kazi, *Assistant Cotton Botanist*
S. Abid Hussain, *Assistant Entomologist*
Syed Nehal Hussain Aurangzeb, *Cotton Breeder*

Pakistan Central Jute Committee

Jute Research Institute, Tejgaon, Dacca-5. Tel.: 2553. Grams: Pakjute
S. D. Chaudhury, Ph.D., D.I.C. (Lond.), *Director*: fibre crops, plant breeding and general botany
A. Jabbar Mia, M.Sc. (Dac.), Ph.D. (N.C.), *Assistant Botanist*: mutation, plant breeding and plant physiology
D. H. Khan, M.Sc., Ph.D. (Lond.), *Soil Scientist*
M. A. Ali, M.Sc., *Assistant Soil Scientist*
M. Ashraf Ali, M.A. (Dac.), *Statistician*
M. Kasim Ali, M.A. (Dac.), M.S., Ph.D. (La.), *Agronomist*: cultural trials and physiological studies
Mohammed Sharif, B.Sc. (Pb.), Ph.D. (Cantab.), F.N.I., F.P.A.S., *Entomologist*: jute pests and their biological and chemical control
Mohammed Waseque, M.Sc. (Dac.), M.S. (Bris.), *Assistant Botanist (Kishore-gung Sub-station)*: plant breeding, agronomy, plant physiology
Mohatajuddin Mia, M.Sc. (Dac.), Ph.D. (Utah): cytology and breeding
Mustafizur Rehman, M.Sc. (Pb.), *Assistant Entomologist*: field trials on pesticides
Q. A. Ahmed, M.Sc. (Cal.), Ph.D. (Belf.), *Plant Pathologist*: mycology, plant pathology and soil microbiology

Zoological Survey Department

183, McLeod Road, Ispahani Building, Karachi-1
A. R. Ranjha, M.Sc., D.Sc., F.Z.S., F.I.S., F.Z.S.I., *Officer-in-Charge*: mollusca systematics, marine zoology and embryology
M. S. U. Siddiqui, M.Sc. (Agra), M.Sc. (Lond.), D.I.C., F.Z.S., *Zoologist*: systematics of birds and mammals
Mrs. Suraiya Rashid, M.Sc., Ph.D., *Assistant Helminthologist*: systematics of helminth parasites of marine fishes

Agricultural Census

Pakistan Secretariat, Queensway, Karachi. Tel.: 53061
M. Masud, C.S.P., *Agricultural Commissioner*
Durga Dass Sharma, B.A. (Bom.), *Deputy Commissioner (Technical)*
M. Iqbal Malik, B.Sc.Agr. (Pb.), M.S. (Ariz.), *Assistant Commissioner (Technical)*: agricultural economics

PAKISTAN

DATA PROCESSING CENTRE, LAHORE

Abdus Sattar, M.Sc.Agr. (Pb.), Ph.D. (Texas), *Deputy Commissioner (Technical)*:
agricultural economics
I. H. Hassani, *Deputy Director*; data processing
Mir Iftikhar Hasan, M.A. (Pb.), *Statistician*
M. Muzaffar Ali, B.A. (Osm.), *Technical Officer*; data processing

REGIONAL OFFICE, LAHORE

A. H. Khokhar, B.A. (Pb.), *Deputy Commissioner (Technical)*

B. MINISTRY OF COMMERCE

Pakistan Tea Research Station

Srimangal (Sylhet), East Pakistan. 'Grams: Tresearch
K. A. Hasan, M.Sc. (Dac.), Ph.D. (Lond.), D.I.C., A.R.I.C., *Acting Chief Scientific Officer*; soil in relation to tea

AGRO-BOTANY DIVISION

M. M. M. Ali, B.Agr., *Assistant Botanist*; vegetative propagation of tea
M. A. Mannan, M.Sc., M.S. (Tex.), *Agronomist*; factors regulating yield of tea
M. A. Wabab, B.Sc.Agr., M.Sc.Agr., *Assistant Agronomist*; effects of pruning on tea

CHEMISTRY DIVISION

S. H. Chowdhury, M.Sc., *Assistant Chemist*; nutrient status of tea soils

PLANT PROTECTION DIVISION

K. Akbar, M.Sc. (Alig.), *Pathologist*; control of weeds, systematics of fungi, tea pathology
S. M. Khan, M.Sc.Agr., *Assistant Entomologist*; tea pests

C. MINISTRY OF FUEL, POWER & NATURAL RESOURCES

Pakistan Atomic Energy Commission

P.O. Box 3112, Karachi. Tel.: 41165. 'Grams: Atomcom
I. H. Usmani, Ph.D., D.I.C. (Lond.), C.S.P., *Chairman*

ENTOMOLOGY

A. R. Azmi, M.Sc. (Dac.), *Scientific Officer (Atomic Energy Centre, Lahore)*; use of radioisotopes in entomology
M.S. Qureshi, M.Sc. (Alig.), Ph.D. (Mass.), *Senior Scientific Officer (Instructor, Centro Institute of Nuclear Science, Tehran, Iran)*; radionuclides in relation to control of insects

PLANT GENETICS

Ashraful Huq, M.Sc.Agr. (Ban.), Ph.D. (Lond.), *Scientific Officer*
G. Bari, M.Sc.Agr. (Pb.), M.S. (Minn.), *Scientific Officer (Atomic Energy Centre, Lahore)*
Shamsul Huq, B.Sc.Agr. (Dac.), M.S. (La.), *Scientific Officer (Atomic Energy Centre, Dacca)*

PLANT PHYSIOLOGY

Shaukat Ahmad, M.Sc. (Sind), Ph.D. (N.C.), *Scientific Officer*

PAKISTAN

D. MINISTRY OF INDUSTRIES

Pakistan Council of Scientific and Industrial Research

Pakistan Secretariat, Karachi. Tel.: 52104. Grams: Consearch
Salimuzzaman Siddiqui, T.Pk., Ph.D., F.R.S., Director

CENTRAL LABORATORIES

34-37 Pakistan Naval Hospital, Karachi Cantt. Tel.: 50071. Grams: Consearch

Sami Ahmad Khan, B.A., G.V.Sc., *Research Pharmacologist*: pathology and bacteriology
Shahid H. Ashraf, M.Sc., Ph.D., F.R.E.S., M.S.Sigma., *Senior Research Officer*: entomology

EAST REGIONAL LABORATORIES

Mirpur Road, Dhanmondi, Dacca. Tel.: 5876. Grams: Epsgearch, Dacca
S. Hedayetullah, M.Sc., Ph.D., *Reader*, *Natural Products Division*: research and utilization of natural products

E. PLANNING COMMISSION

K. D. A. Building, Strachen Road, Karachi. Tel.: 55071
M. Shafi Niaz, T.Pk., B.Sc.Agr. (Pb.), B.Litt. (Oxon), *Chief (Agriculture Section)*: agricultural economics; land reforms; rural economics
Ghulam Mohammad, B.Sc.Agr., M.Sc.Agr. (Pb.), *Deputy Chief (Agriculture Section)*: research on varietal factors of yield in wheat; water and salt movement in soil; economic studies on crop production
Aslam Ghayur, M.Sc.Agr. (Pb.), *Research Officer*: horticulture; agricultural economics; agricultural planning
A. M. Chaudhury, B.Sc.Agr. (Pb.), M.Sc.Agr. (Ph.), Ph.D. (Ohio), *Assistant Chief*: production and cost of crops; farm management
Aziz Sayeed, B.Sc.Agr. (Bom.), Ph.D. (Calif.), *Assistant Chief*: agricultural development through cooperative methods
Faizur Rahman, B.Sc.Agr., M.Sc.Agr. (Ph.), *Research Officer*: development of agriculture and improved methods
Mahboob Ali H. Khoja, B.A., M.S. (Wis.), *Assistant Chief*: land reforms; rural cooperative movement
M. Sulaiman Kakli, B.Sc.Agr. (Ph.), M.F. (Yale), M.S. (Wis.), Ph.D. (Mich.), *Assistant Chief*: soil conservation; water erosion
S. Naghat Hussain, B.Sc.Agr. (Agra), M.Sc.Agr. (Pb.), *Research Officer*: economics of crop production
Sayed Ahmad, B.Sc.Agr. (Ph.), M.Sc.Agr. (Pb.), *Research Officer*: nature of culturable wastes and their utilization

UNIVERSITIES DACCA UNIVERSITY

Ramna, Dacca, East Pakistan

DEPARTMENT OF BOTANY

Majeed Ahmed, M.Sc., Ph.D. (Cantab.), *Professor*: genetics of yeast; jute retting bacteria; gene structure and action
Ashraful Haq, M.Sc., Ph.D. (Lond.), *Reader*: radiation cytology

PAKISTAN

- A. K. M. Nurul Islam, M.Sc., Ph.D. (Mich.): phycology (taxonomy and cultural studies)
Mohammed Abdul Wadud, M.Sc. (Dac.): mycology and plant pathology
Mohammed Ismail, M.Sc.: plant ecology
Mohammed Jalaluddin, M.Sc. (Dac.): jute retting micro-organisms
S. A. Khan, M.Sc. (Luck.): bryology and pteridology (morphological and cytological studies)

DEPARTMENT OF SOIL SCIENCE

- A. Q. M. B. Karim, M.Sc., Ph.D., D.I.C., *Head of Department*: nutrition of rice and its deficiency characteristics both for macro- and micro-nutrients
A. Karim, M.Sc. (Dac.), Ph.D. (Adel.), *Reader*: soil survey and soil classification
F. Hud, M.Sc., Ph.D., *Lecturer*: plant nutrition; physical studies on rice plant nutrition

DEPARTMENT OF ZOOLOGY

- H. K. Yosufzai, M.Sc., D.Phil., Ph.D., *Head of Department*: helminthology with special reference to trematodes; cestodes and cytology with special reference to mammals
A. K. M. Aminul Haq, M.Sc., Ph.D., *Lecturer*: fishes
S. A. Shafiq, M.Sc., *Lecturer*: entomology

KARACHI UNIVERSITY

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DEPARTMENT OF BOTANY

- S. Z. Hasnain, M.Sc. (Alig.), Ph.D. (Minn.), *Reader*: plant pathology, cereal rusts and plant geography
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Rafiq Ahmed, M.Sc. (Pb.), Ph.D., *Lecturer*: plant physiology
S. I. Ali, M.Sc. (Alld.), Ph.D. (Lnnd.), *Lecturer*: plant taxonomy

DEPARTMENT OF ZOOLOGY

- M. A. H. Qadri, M.Sc. (Alig.), Ph.D. (Cantab.), D.Sc. (Alig.), *Head*: entomology
Hamid Mahmood, M.Sc., Ph.D., *Lecturer*: entomology
Khawja Abdul Mujib, M.Sc. (Pb.), M.S. (Iowa), *Lecturer*: embryology
M. Haque, M.Sc. (Osm.), Ph.D. (Wales), *Lecturer*: marine biology
M. Tufail, M.Sc. (Alig.), Ph.D. (Exe.), *Lecturer*: marine biology

PANJAB UNIVERSITY

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DEPARTMENT OF BOTANY

- S. A. Lodhi, M.Sc. Hons. (Pb.), M.Sc. (Corn.), *Reader*: mycology
A. H. Sheikh, M.Sc. Hons. (Pb.), *Senior Lecturer*: ferns
Khalid Ilamid Sheikh, M.Sc. (Pb.), *Lecturer*: plant ecology
M. S. Zahur, M.Sc. Hons. (Pb.), Ph.D. (Corn.), *Senior Lecturer*: anatomy, morphology and systematics of angiosperms
Zain-ul-Abedin, M.Sc. (Ph.), D.Sc. nat. (Tubingen), *Lecturer*: plant physiology

DEPARTMENT OF ZOOLOGY

- Muzaffar Ahmed, M.Sc. (Alig.), A.I.A.R.I., Ph.D. (Chic.), *Head of Department*: termites

PAKISTAN

Abu Babr, M.Sc. Hons. Ph.D. (Harv.), *Senior Lecturer*: vertebrate palaeontology
Daler Khan, M.Sc. (Pb.), Ph.D. (Lond.), *Lecturer*: helminthology
M. Arslan, M.Sc. Hons. (Pb.), *Lecturer*: endocrinology
M. Y. Javed, M.Sc. (Pb.), *Lecturer*: ecology

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DEPARTMENT OF BOTANY

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COLLEGE OF AGRICULTURE

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Aziz Ahmed: soils
Gul Bokhari: crops and soils
Mohammed Ataullah, Ph.D.: plant breeding
Mohammed Hussain: crops
M. I. Bajwa: crops

ANIMAL SCIENCE SECTION

Basit Ali Shah: dairy technology
Syed Kamal, Ph.D.: dairy technology

ECONOMICS AND SOCIOLOGY SECTION

S. Mehdi Haider Rizvi: agricultural economics and rural sociology

ENTOMOLOGY SECTION

Mohammed Haroon Khan, B.Sc. (Lond.), A.R.C.S.: entomology

HORTICULTURE SECTION

M. S. Roghani: horticulture

SIND UNIVERSITY

Hyderabad, West Pakistan

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A. S. Islam, M.Sc., Ph.D., *Professor*: cytogenetics
I. I. Chaudhri, M.Sc., D.Sc., *Reader*: ecology and plant physiology
Khurshid Mustafa, M.Sc., D.Sc., *Senior Lecturer*: paleobotany
Matinuddin Khan, M.Sc., *Lecturer*: plant pathology
S. Z. Hyder, M.Sc., *Lecturer*: plant physiology
Zaid Bin Abdul Kadir, M.Sc., *Lecturer*: cytogenetics

PAKISTAN

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Khairpur Mirs, West Pakistan

DEPARTMENT OF BOTANY

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EAST PAKISTAN AGRICULTURAL UNIVERSITY

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I. H. Khan, *Head of Department*
Md. Tariqul Islam, M.Agr., *Lecturer*

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Md. Tofaiyel Hussain Sarkar, B.Sc., *Head of Department*
M. Amir Hussain Talukdar, B.S., M.S., *Lecturer*

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Laylpur, West Pakistan

Agricultural College and Research Institute

Laylpur, West Pakistan

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Principal: insect taxonomy; biology and applied entomology

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Mirza Mohammed Ibrahim Khan, M.Sc.Agr. (Pb.), *Assistant Professor:* arable crops
Sana Ullah, M.Sc.Agr. (Pb.), M.Sc., Ph.D. (Minn.), *Associate Professor:* dairy husbandry
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Shaukat Ali, M.Sc. (Pb.), *Assistant Professor:* systematic botany

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Abdul Wahhab Khan, M.Sc. (Pb.), M.Sc. (Calif.), Ph.D. (Pb.), F.R.I.C. (Lond.),
Agricultural Chemist and Professor: soil fertilizers, plant nutrition and plant chemistry
Abdul Khabir, M.Sc. (Pb.), *Assistant Professor:* agricultural chemistry
Inamul Haq, M.Sc.Agr. (Pb.), M.Sc. (Wash.), *Associate Professor:* agricultural chemistry
Shamsuddin Butt, M.Sc. (Alig.), B.Sc. (Wash.), *Assistant Professor:* general chemistry

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Khawja Abdul Huq, M.Sc.Agr. (Pb.), *Professor:* acridology and insect bionomics
Manzurul Haq, M.Sc.Agr. (Pb.), *Assistant Professor:* crop pests
Mohammed Abdullah Asghar, M.Sc.Agr. (Pb.), *Assistant Professor:* bionomics and systematics of Grylliidae
Mohammed Yunus, M.Sc.Agr. (Pb.), *Associate Professor:* leaf miners

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Riazur Rehman, M.Sc. (Wash.), *Assistant Professor*: bacteriology and food technology

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Saeed Ahmed, M.Sc.Agr. (Pb.), Ph.D. (Fla.), *Head of Department*: horticulture
Niaz Ali, M.Sc.Agr. (Pb.), *Professor*: horticulture
Mohammed Yaqub Chowdhury, M.Sc.Agr. (Pb.), M.Sc. (Ariz.), *Assistant Professor*: horticulture

DEPARTMENT OF PLANT PATHOLOGY

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Rahmat Ali, B.V.Sc. (Pb.), *Lecturer*

RESEARCH SECTIONS

BOTANY SECTION

Nazir Ahmed Kanth, M.Sc.Agr. (Ph.), *Assistant Fodder Botanist*; fodder crops and pastures

CEREAL SECTION

Mohammed Abdul Aziz, M.Sc.Agr. (Pb.), *Cereal Botanist*
Hayat Mohammed Bhatti, M.Sc.Agr. (Ph.), *Assistant Botanist*: cereal technology
Manzoor Ahmed Bajwa, M.Sc.Agr. (Pb.), *Assistant Botanist (Cereals)*
Sirajuddin Shah, M.Sc.Agr. (Pb.), M.Sc. (Ariz.), *Assistant Botanist (Maize)*: maize breeding

CHEMISTRY SECTION

Abdul Rashid Sharar, M.Sc.Agr. (Pb.), *Assistant Bacteriologist*
Anwar Hussain, M.Sc. Hons., F.R.I.C. (Lond.), *Second Agricultural Chemist*
Fateh Mohammed, M.Sc.Agr. (Pb.), *Assistant Agricultural Chemist*
Nazir Ahmed, M.Sc.Agr. (Ph.), *Assistant Agricultural Chemist*

COTTON SECTION

Abdul Hamid Khan, M.Sc.Agr. (Pb.), M.S. (N. Mex.), *Cotton Botanist*
Siraj-ud-Din Khan, M.Sc.Agr. (Ph.), *Assistant Botanist (Cotton)*
Wali Mohammed, M.Sc.Agr. (Pb.), *Assistant Botanist (Cotton)*

ENTOMOLOGY SECTION

Hafiz Abdul Qayyum, M.Sc.Agr. (Pb.), *Assistant Entomologist (General)*

OIL SEED SECTION

Shamsad Akhtar Khan, B.Sc.Agr. (Ph.), M.Sc. (Virg.), *Oilseed Botanist*: research on oilseeds
Abdur Rahman Chaudhry, M.Sc.Agr. (Pb.), *Assistant Botanist (Tobacco)*
Mohammed Afzal Naz, M.Sc.Agr. (Pb.), *Assistant Oilseed Botanist*
Sultan Ahmed Tremzi, M.Sc.Agr. (Pb.), Ph.D. (Pb.), M.S. (Tex.), *Assistant Oil Technologist*

PAKISTAN

PLANT PATHOLOGY SECTION

Mohammed Akhtar, M.Sc.Agr. (Ph.), *Assistant Plant Pathologist*

PLANT PHYSIOLOGY SECTION

Mohammed Afzal, M.Sc.Agr. (Ph.), Ph.D. (Neb.), *Plant Physiologist*

SOIL SCIENCE SECTION

Carl A. Larson, Ph.D., *Professor of Soil and Soil Scientist*

VEGETABLE SECTION

Abdul Rashid Khan, M.Sc.Agr. (Ph.), *Vegetable Botanist*

Mohammed Shahi, M.Sc.Agr. (Ph.), *Assistant Botanist (Vegetables)*

EAST PAKISTAN

DEPARTMENT OF AGRICULTURE

East Pakistan Agricultural Institute

Tejgaon, Dacca

Fariduddin Ahmed, M.Sc.Bot., M.Sc.Chem., M.A., M.S. (Ohio), *Principal:*
economic conditions of cultivators of East Pakistan

AGRICULTURAL RESEARCH LABORATORY

Tejgaon, Dacca

Entomology Section

M. Z. Alam, B.Sc.Agr., B.Agr., M.Agr. (Dac.), *Entomologist:* biological control
of insects

Alauddin Ahmed, B.Sc., B.Agr. (Dac.), *Assistant Entomologist*

Mycology and Plant Pathology Section

M. Ishaque, M.Sc. (Cal.), Ph.D. (Ia.), *Mycologist:* diseases of crops

M. Jalaluddin Talukdar, B.Sc.Agr., B.Agr. (Dac.), *Assistant Mycologist:*
mycology and plant pathology

DEPARTMENT OF FISHERIES

Eden Building, Ramna, Dacca-2. Tel.: 2068. 'Grams: Epafish

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A. H. Chokdar, M.Sc., *Botanist*

A. R. Khan, M.Sc., *Fisheries Technologist*

L. Rehman, M.Sc., *Deputy Director (Technology)*

DEPARTMENT OF FORESTS

East Pakistan Secretariat, Eden Building, Dacca-2. Tel.: 2128. 'Grams:
Chiforepak

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N. Ahmad, B.Sc. Hons. (Cal.), A.I.F.C., *Assistant Chief Conservator:* forest
management

A. W. Khan, M.Sc. (Cal.), A.P.F.C., *Divisional Forest Officer (Silvicultural
Research Division and Rubber Plantation Division)*

PAKISTAN

Forest Management Officers

- A. Alim, B.Sc. Hons. (Dac.), A.P.F.C., *Divisional Forest Officer*: forest management
A. Hamid, B.Sc., A.I.F.C., *Conservator (Eastern Circle)*: forest management
A. H. Chowdhury, B.Sc. (Cal.), A.I.F.C., *Divisional Forest Officer*: forest management
A. M. Chowdhury, B.Sc. (Cal.), A.P.F.C., *Divisional Forest Officer*: working plans, forest management
A. S. M. Zaheruddin, B.Sc., A.I.F.C., *Conservator* (on deputation: Leader of Pakistan Forest Expert Team in Iran)
C. Kemal Rehjem, B.Sc. (Edin.), B.Sc. Hons. (Cal.), A.I.A.R.I.: Scientific Liaison Officer, Pakistan High Commissioner's Office in the U.K.
K. K. Ahmad, B.Sc. (Edin.), B.Sc. (Cal.), M.Sc. (Alig.), *Divisional Forest Officer*
M. Atiqullah, B.Sc. Hons. (Dac.), A.P.F.C., *Divisional Forest Officer*: forest management
M. B. Choudhury, M.Agr., A.P.F.C., *Divisional Forest Officer*: working plans and forest management
M. E. Huq, B.Sc. Hons., A.P.F.C., *Divisional Forest Officer*: forest management
M. R. Choudhury, B.Sc. Hons. (Cal.), A.P.F.C., *Divisional Forest Officer*: forest management, timber treatment
S. Anwar, B.Sc. Hons. (Dac.), A.P.F.C., *Divisional Forest Officer*: forest management
S. M. Hassan, B.A. Hons. (Oxon.), *Divisional Forest Officer*: forest management

East Paklstan Forest Industries Development Corporation

- 127 Motijheel Commercial Area, Dacca. Tel.: 6576. 'Grams: Fidcor
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DIRECTORATE OF LIVESTOCK SERVICES

27 Nawab Katra Road, Dacca

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Ihabilur Rahman, M.Sc., Ph.D. (Edin.), *Director, Animal Husbandry (Nutrition), Tejgaon*
Abdur Rahman, B.A., G.V.Sc., *Superintendent*: research and preparation of G.T.V.
M. A. Quddus, B.Agr., M.Sc., *Officer-in-Charge, Modern Dairy Farm*: animal breeding, milk production

Institute of Animal Parasitology

Mahakali, Dacca

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Obedul Huq, B.Agr., M.Sc., Ph.D., *Livestock Economist*
Rafiuuddin Ahmad, G.V.Sc., *Assistant Research Officer*: animal parasites and parasitism
Ruhul Amin, M.Sc., *Expert, Foot and Mouth Disease*: foot and mouth vaccine, rabies vaccine
Wazed Ali, G.V.Sc., *Assistant Disease Investigation Officer*: poultry diseases
M. Nasim, M.Sc., *Research Officer*: artificial insemination, Mymensingh

Poultry Vaccine Institute, Comilla

- T. Ali, G.V.Sc., *Officer-in-Charge*: poultry vaccine

PAKISTAN

WEST PAKISTAN

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Abdul Aziz Khan, Ph.D. (Brist.), *Deputy Director of Agriculture (Extension Service)*; horticulture
Abdul Mannan Khan, B.Sc.Agr., A.I.A.R.I., *Plant Protection Officer*; entomology
Ahodus Sattar, D.Sc. (Lond.), *Deputy Director of Agriculture (Planning)*; plant pathology and mycology
Sadiq Ali, B.Sc. (Calif.), *Fruit Development Officer*; horticulture
S. M. Malik, B.Sc.Agr., A.I.A.R.I., *Agricultural Research Officer*

AGRICULTURAL RESEARCH STATION Ranibagh, Quetta. Tel.: 2053

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A. Qaiyum, M.Sc. (Alig.), Ph.D. (Calif.), *Entomologist*
M. Bashir Chowdhury, M.Sc.Agr. (Pb.), M.S., Ph.D. (Ill.), *Agricultural Chemist*; soil fertility; quality of irrigation water
Mohammed Rafique, M.Sc. (Pb.), *Fertilizer Conducting Officer*; soil fertility
M. S. Mirza, M.Sc.Agr. (Pb.), *Mycologist*; soil-borne fungi, rusts of wheat
S. A. Malik, M.Sc. (Pb.), *Plant Pathologist*; mycology, plant pathology
S. A. Qureshi, M.Sc.Agr. (Pb.), Ph.D. (Wash.), *Economic Botanist*; breeding of cereals

AGRICULTURE RESEARCH STATION Tarnab Farm, Peshawar. Tel.: 2304 Mian Obedullah Jan, B.Sc.Agr., Ph.D., A.I.A.R.I., *Deputy Director*

BOTANICAL SECTION

Mohammad Hussain Shah, M.Sc. (Pb.), *Maize Botanist*; hybrid and local maize improvement
Mohammad Siddique, B.Sc.Agr. (Pesh.), *Assistant Botanist*; tobacco breeding
Mohammed Suleman, B.Sc.Agr., A.I.A.R.I., *Economic Botanist*; cereal breeding
Syed Badshah, M.Sc. (Utah), *Assistant Botanist*; wheat breeding

HORTICULTURAL SECTION

Altaf Hussain Chowdhry, M.Sc.Agr. (Pb.), *Assistant Horticulturist*; breeding vegetable varieties
Inayatullah Khan, B.Sc.Agr. (Pb.), *Assistant Horticulturist*; research on fruit culture
Mian Said, M.Sc.Agr. (Pb.), M.Sc. (Calif.), *Horticulturist*

ENTOMOLOGY SECTION

Mohammed Rashid Khan, M.Sc., Ph.D., D.I.C. (Lond.), *Entomologist*
Sheruddin Khan, M.Sc., *Assistant Entomologist*

FRUIT PRESERVATION SECTION

Sher Ahmed Khan, B.Sc.Agr. (Pb.), *Food Technologist*; research on cold storage; dehydration and fruit preservation

PLANT PATHOLOGY SECTION

Mohammed Amin, M.Sc.Agr. (Pb.), *Mycologist*; research on gram diseases
Mohammed Sarwar Khan, B.Sc.Agr. (Pb.), A.I.A.R.I., *Plant Pathologist*; cereal diseases

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M. M. Husan, B.Sc.Agr. (Osm.), *Officer-in-Charge, Pastures: improvement of fodder and pastures*

STATISTICAL SECTION

Abdullah Choudhury, B.A. (Pb.), *Statistician: lay-out and analysis of field experiments*

SUGARCANE SECTION

Riyasat Ali, B.Sc.Agr., *Assistant Botanist: sugarcane*
Said Kamal Khan, M.Sc.Agr., *Sugarcane Specialist: sugarcane improvement*
Wali Mohammed Khan, B.Sc.Agr., *Assistant Botanist: sugar beet breeding and acclimatization of sugar beet*

AGRICULTURAL RESEARCH STATION

Dokri, West Pakistan

A. R. Pirzada, M.Sc.Agr., *Rice Botanist: rice breeding*

HORTICULTURAL EXPERIMENT STATION

Mirpurkhas, West Pakistan

A. P. Jagirdar, M.Sc.Agr., *Horticulturist: fruit culture and preservation*

MAIZE BREEDING SUB-STATION

Yusuf Wala, Montgomery

A. G. Bhatti, Ph.D., *Maize Botanist: maize breeding*

Agricultural College and Research Institute

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Barkatullah Khan, M.Sc.Agr. (Agra), Dip.Com.Dev. & Hort. (N.C.), *Professor of Horticulture*

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PAKISTAN

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M. Ashfaq, L.V.P., B.V.Sc., Dip.Gen., *Deputy Director (Development)*: livestock breeding and genetics
Mohammed Yusaf, B.A. Hons., L.V.P., B.V.Sc., M.R.C.V.S., *Planning and Progress Officer*: animal breeding and husbandry
S. Z. Karim, M.Sc. Hons., M.S. (Wis.), L.V.P., *Dairy Development Officer*: dairy science

Livestock Breeding and Research

North Zone, Lahore

- S. M. Ishaq, M.Sc., L.V.P., *Livestock Economist and Deputy Director (Livestock)*
Abdul Ghani, L.V.P., M.Sc., *Officer, Sheep Shearing Scheme (Lahore)*: sheep husbandry and wool technology
Abdul Qayyum Qazi, L.V.P., M.Sc., *Farm Superintendent (Bahadur Nagar)*: livestock breeding and research
Abdur Rahim, B.V.Sc., *Dairy Farm Superintendent (Ahmad Pur East)*: livestock breeding
Mahboob Ali Khan, B.V.Sc., *Manager, Livestock Farm (Bahadurnagar)*: live-stock management
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Mohammed Azam, B.V.Sc., *Wool Analyst (Jaba, Peshawar)*: wool technology
Mohammed Jamil Qureshi, L.V.P., B.Sc., M.Sc., *Fine Wool Scheme (Lahore)*: sheep husbandry and wool technology
Mohammed Shafi, L.V.P., B.V.Sc., *Deputy Farm Superintendent (Fazilpur)*: livestock breeding and management
Saeed Asghar, B.V.Sc., M.R.C.V.S., *Livestock Development Officer (Lahore)*: livestock development and husbandry

Livestock Breeding and Research (South Zone)

Mirpurkhas

- M. P. Buriro, M.Sc., D.V.M., *Deputy Director (Livestock)*: animal breeding and husbandry
A. K. Mcmon, G.B.V.C., *Deputy Farm Superintendent (Nahisar)*: animal nutrition
Fazal Karim Chaudhary, B.V.Sc., *Deputy Farm Superintendent (Dadu)*: livestock farming
Fazal Karim Malik, L.V.P., M.Sc., *Farm Superintendent (Tando Mohammed Khan)*: animal husbandry
Karam Shah, B.V.Sc., *Assistant Farm Officer (Usta Mohammed)*: livestock breeding
K. M. Mangi, G.V.Sc., *Deputy Farm Superintendent (Usta Mohammed)*: sheep husbandry
Mohammed Rafiq Chaudhary, B.Sc., *Poultry Production Officer (Quetta)*: poultry husbandry
Mohammed Tufail Khan, L.V.P., B.V.Sc., M.Sc., *Farm Superintendent (Dadu)*: animal breeding and research

Poultry Development and Research

- Abdul Hamid Kakezai, L.V.P., B.V.Sc., *Poultry Production Officer (Murree)*: poultry husbandry

PAKISTAN

Abdul Hamid Sakhota, B.V.Sc., *Poultry Production Officer (Lahore Cantonment)*: poultry breeding
Abdul Wahid Qazi, G.B.V.C., *Poultry Production Officer (Peshawar)*: poultry husbandry

Sheep Conservation Scheme

G. H. Sunra, G.V.Sc., F.S.T.C., *Sheep Conservation Officer (Bahawalpur)*
Tasaddaq Hussain, L.V.P., B.V.Sc., *Sheep Conservation Officer (Lahore)*: parasitic diseases
Khurshid Hussain, L.V.P., B.V.Sc., *Supervisor, Sheep Conservation (Mastung)*: sheep husbandry
Rahim Khan Husnie, B.V.Sc., *Sheep Development Officer (Mastung)*: sheep husbandry

Disease Investigation Scheme

Abdul Qayum Chaudhari, L.V.P., B.V.Sc., M.R.C.V.S., *Disease Investigation Officer (Karachi)*: veterinary pathology, bacteriology and poultry diseases
Abdul Rashid Khan, B.V.Sc., *Assistant Disease Investigation Officer (Quetta)*: sheep diseases
Abdus Salam Akhtar, B.V.Sc. Hons., Dip.Bact., *Disease Control Officer (Lahore)*: veterinary pathology and biological products
Iftikharuddin, B.V.Sc., *Assistant Disease Investigation Officer (Mirpurkhas)*: parasitic diseases
Imtiaz Ali, G.V.Sc., *i/c Diagnostic Laboratory (Karachi)*: biological products and laboratory diagnosis
Mohammed Anwar Shah, B.V.Sc., *Assistant Disease Investigation Officer, Sheep (Bahawalpur)*: sheep diseases
Mohammed Arshad Farooqi, B.Sc. A.H., *Assistant Disease Investigation Officer, Poultry (Karachi)*: poultry diseases
Mohammed Naushad Khan, L.V.P., *Assistant Disease Investigation Officer (Peshawar)*
M. M. Sarwar, L.V.P., B.V.Sc., Ph.D., *Disease Investigation Officer (Lahore)*: veterinary helminthology and other parasitic diseases
Mohammed Rafiq Raja, B.V.Sc., M.Sc., *Assistant Disease Investigation Officer (Poultry)*: poultry diseases
Mohammed Zarif Durrani, B.V.Sc., M.Sc., Ph.D., *Disease Investigation Officer (Quetta)*: veterinary parasitology and other parasitic diseases
S. H. Qureshi, G.B.V.C., M.Sc., Ph.D., *Disease Investigation Officer (Peshawar)*: poultry diseases

College of Animal Husbandry

24 Cooper Road, Lahore, West Pakistan. Tel.: 3414. 'Grams: Vetcol
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Akhtar Ali, L.V.P., B.V.Sc., *Assistant Professor*: veterinary parasitology
Farzand Ali, M.Sc., M.R.C.V.S., D.T.V.M., *Professor*: veterinary parasitology and medicine
Khawja Rashid Ahmad, B.V.Sc., M.R.C.V.S., *Assistant Professor*: veterinary medicine
Lal Hussain Shah, L.V.P., B.V.Sc., *Assistant Professor*: veterinary medicine
Mohammed Abdul Latif, L.V.P., B.V.Sc., *Assistant Professor*: veterinary pharmacology and therapeutics
Mohammed Amin, M.Sc., *Assistant Professor*: biology
Mohammed Bakhsh Sial, B.V.Sc., Ph.D., *Professor*: biochemistry, physiology and animal nutrition

PAKISTAN

Mohammed Nawaz, L.V.P., B.V.Sc., M.Sc., *Professor*: veterinary pathology and bacteriology
Mohammed Saiyadan Jaffery, B.V.Sc., M.Sc., *Assistant Professor*: poultry pathology
Mohammed Shafiq, B.V.Sc., M.Sc., *Assistant Professor*: animal physiology
S. A. Chaudhari, M.R.C.V.S., *Professor*: anatomy
Shabbir Hussain, L.V.P., B.V.Sc., M.R.C.V.S., *Professor*: veterinary surgery and animal husbandry
Wahidul Hanif, B.V.Sc., M.Sc., *Dairy Chemist*: dairy chemistry
Zafaruddin Ahmed, L.V.P., B.V.Sc., M.Sc., *Assistant Professor*: veterinary surgery and obstetrics
Zahur Ahmed Shah, L.V.P., B.V.Sc., *Professor*: animal husbandry and dairying

Disease Investigation Scheme

College of Animal Husbandry, Lahore, West Pakistan
Saeed Ahmed Shaikh, B.V.Sc., M.R.C.V.S., *Disease Investigation Officer*: veterinary virology
Abdul Rashid Bhatti, B.V.Sc., *Assistant Disease Investigation Officer*: poultry diseases
Aminuddin Ahmed, L.V.P., D.L.M., *Assistant Disease Investigation Officer*: parasitic diseases and leather technology
Maqbool Ahmad Chaudhry, B.V.Sc., *Assistant Disease Investigation Officer*: parasitic diseases
Mohammed Ashraf Qureshi, B.V.Sc., *Assistant Disease Investigation Officer*: bacterial diseases
Mohammed Aslam Chaudhury, B.V.Sc., *Assistant Disease Investigation Officer*: nutritional diseases
Mohammed Aslam Pasha, B.V.Sc., *Assistant Disease Investigation Officer*: parasitic diseases

Animal Nutrition and Dairying Scheme

College of Animal Husbandry, Lahore, West Pakistan
Irshad Ahmed, L.V.P., B.V.Sc., Ph.D., *Physiology Chemist*: animal nutrition
Manzur Ahmed, B.V.Sc., M.Sc., *Artificial Insemination Officer*: animal reproduction
Mohammed Salim Qureshi, B.V.Sc., M.Sc., *Assistant Research Officer*: animal nutrition
Mohammed Yusaf Vaid, B.A., L.V.P., B.V.Sc., M.Sc., *Dairy Technologist*: dairy technology
S. M. Athar, G.V.Sc., *Assistant Research Officer*: crop husbandry

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M. Azher Salim, M.Sc., *Fisheries Chemist*, Rawalpindi
S. M. K. Sufi, B.Sc., *Fisheries Research Officer*, Hyderabad

SOIL CONSERVATION PROJECT

Rawalpindi, West Pakistan
A. G. Riaz, B.Sc.Agr., Ph.D. (Wales), *Director*: soil conservation
M. A. Hameed Chaudhry, M.Sc.Agr., *Agronomist*: agronomic research in soil conservation

PAKISTAN

- Mohammed Rafi, B.Sc.Agr., *Assistant Agricultural Engineer*: engineering research in soil conservation
Mohammed Rafique, B.Sc.Agr., *Assistant Soil Scientist (Laboratory)*: soil science with special reference to soil conservation
Mohammed Sharif, B.Sc.Agr., M.Sc., Ph.D., *Soil Scientist*: soil science with special reference to soil conservation
Munir-ul-Haq, B.Sc.Agr., M.Sc.Agr., *Assistant Soil Scientist*: soil science with special reference to soil conservation

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- A. Amerasinghe, Ph.D. (Minn.), *Deputy Director, Animal Production and Health*
- E. F. L. Abeyratne, Ph.D. (Oxon.), B.Sc. (Lond.), *Agricultural Research Officer (Dry Farming)*
- D. V. W. Abeysgunawardena, B.Sc. (Cey.), Ph.D. (Lond.), D.I.C., *Asst. Plant Pathologist*: control of diseases of potatoes, citrus, etc., upcountry
- A. Bandaranayake, B.Sc.Vet. (Bom.), Ph.D. (Lond.), *Veterinary Research Officer*: parasitology
- H. E. Fernando, B.Sc. (Cey.), M.Sc., Ph.D. (Ill.), *Entomologist*: economic entomological investigations
- L. H. Fernando, B.Sc. (Lond.), Ph.D. (Lond.), *Botanist*: plant breeding and agronomic investigations
- J. S. Gunasekera, B.Sc.Agr. (Agra), *Soil Conservation Officer*: studies on soil erosion control
- E. Jayanetti, B.Sc.Agr. (Agra), Ph.D. (McG.), *Tobacco Officer*: tobacco extension and agronomic investigations
- E. H. W. Jayasekera, B.Sc. Hons. (Cey.), *General Manager, Sugar Cane Plantations, Kantalai, Research Officer (Sugar Cane)*: agronomy of sugar cane
- D. M. A. Jayaweera, B.Sc. (Lond.), M.Sc. (Lond.), F.L.S., *Superintendent, Botanic Gardens*, at Harvard University for post-graduate training; floral morphology and ecology
- P. Jegannathan, B.V.Sc. (Syd.), M.R.C.V.S., *Veterinary Research Officer*: artificial insemination studies
- C. R. Panabokke, B.Sc. Hons. (Cey.), Ph.D. (Adel.), *Acting Chemist*: soil classification and land use surveys
- J. W. L. Peiris, B.Sc., Ph.D. (Lond.), D.I.C., Dip.Agr. (Lond.), *Plant Pathologist*: control of plant diseases
- J. E. Senaratne, B.Sc. (Lond.), F.L.S., *Systematics Botanist*
- W. V. S. Wijeratne, B.V.Sc. (Cey.), Ph.D. (Glas.), M.R.C.V.S., *Research Officer (Animal Genetics)*

FOREST RESEARCH BRANCH

- Forest Research Laboratory, 9 Kew Road, Colombo 2, Ceylon. Tel.: 4501.
- W. R. H. Perera, B.Sc., Dip.For. (Dehra Dun), Post Dip. Course in For. (Oxon.), *Assistant Conservator of Forests, Silviculturist*
- K. Ganesan, B.Sc.Eng. (Lond.), Dip.Civ.Eng. (Cey.), *Timber Utilization Research Officer*

RUBBER RESEARCH INSTITUTE OF CEYLON

- Research Laboratories, Dartonfield, Agalawatta. Tel.: Agalawatta 26. 'Grams: Rubrs
- E. D. C. Baptiste, Ph.D. (Lond.), M.Sc., A.R.C.S., D.I.C., F.I.R.I., *Director and Vice-Chairman, Rubber Research Board*: administration and research

BOTANY DEPARTMENT

- C. A. de Silva, B.Sc. (Lond.), C.D.A. (Wye), *Botanist*: plant selection and field experiments
- R. T. Wijewantha, B.Sc.Hons. (Lond.), M.Sc. (Lond.), *Plant Breeder*: Hevea breeding

CEYLON

CHEMISTRY DEPARTMENT

K. F. Heinisch, Dr.Tech.Sc., Dip.Ing., A.I.R.I., *Rubber Chemist*: rubber chemistry and technology

PLANT PATHOLOGY DEPARTMENT

O. S. Peries, B.Agr.Se. (Melb.), Ph.D. (Brist.), *Acting Plant Pathologist*: diseases of *Hevea brasiliensis*
J. H. Lloyd, B.Sc. Hons. (Wales), *Agricultural Engineer (Colombo Plan)*: Phytophthora control methods

SOILS DEPARTMENT

A. J. Jeevaratnam, B.Sc.Agr. (Cey.), B.Agr.Sc. (Adel.), M.Agr.Sc. (Adel.),
Soils Chemist: soil and manurial problems, plant nutrition

COCONUT RESEARCH INSTITUTE OF CEYLON

Bandirippuwa Estate, Lunuwila. Tel.: Dankotuwa 95. 'Grams: Cocos, Negombo

Substations: (i) Ratmalagara Estate, Madanpe (ii) Pothukulama Estate, Pallama
(iii) Isolated Seed Garden, Adippola.

M. L. M. Salgado, Ph.D. (Cantab.), B.Sc. (Lond.), Dip.Agr. (Cantab.), *Director*

AGROSTOLOGY

K. Santhirasegeram, B.Sc. (Cey.), *Agrostologist* (on overseas study leave): pasture cultivation and management under coconuts

BOTANY

D. V. Liyanage, Ph.D. (Manc.), B.Sc. (Lond.), *Botanist*: coconut breeding and genetics

CHEMISTRY

W. R. N. Nathaniel, M.Sc. (Lond.), A.R.I.C., *Chemist*: plant chemistry, plant nutrition, chemical technology of coconut products

SOIL CHEMISTRY

D. A. Netsinghe, D.Phil. (Oxon.), B.Sc. (Cey.), A.R.I.C., *Soil Chemist*: soil and manurial problems of the coconut palm

TEA RESEARCH INSTITUTE OF CEYLON

St. Coombs, Talawakele. Tel. Talawakele 44. 'Grams: Research

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LIAISON (LOW COUNTRY)

A. W. R. Joachim, O.B.E., B.Sc., Ph.D. (Lond.), F.R.I.C., Dip.Agr. (Cantab.): soil science

LIAISON (ST. COOMBS)

C. B. Foster-Barham, M.A. (Cantab.): field trials

AGRONOMY DIVISION

H. N. Hasselo, Dr. Ir. (Wag.): fertilizer and shade trials

CHEMISTRY DIVISION

J. A. H. Tolhurst, B.Sc. (Rdg.), *Agricultural Chemist*: soil and fertilizer problems

CEYLON

ENTOMOLOGY DIVISION

J. E. Cranham, B.A. (Cantab.), D.I.C., *Entomologist*: insect pests and their control

NEMATOLOGY DIVISION

M. T. Hutchinson, B.Sc., Ph.D. (Rutgers): celworms of tea

PLANT PATHOLOGY DIVISION

D. Mulder, Nat.Phil.Dr. (Amsterdam): fungus and virus diseases and their control

PLANT PHYSIOLOGY DIVISION

T. Visser, Dr.Ir. (Wag.), *Plant Physiologist*: environmental factors and cultivation practices

U. Pethiyagoda, B.Sc. (Cey.), Ph.D. (Lond.), D.I.C.: general physiology

STATISTICS DIVISION

P. Kanapathipillai, B.Sc.Econ. (Lond.): design and analyses of field experiments

TECHNOLOGY DIVISION

E. L. Keegel: manufacturing problems of tea

CEYLON UNIVERSITY

Department of Agriculture

Peradeniya. Tel.: University 258

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R. R. Appadurai, B.Sc.Agr. (Cey.), M.S. (Texas A & M), *Assistant Lecturer in Agronomy*

B. A. Baptist, B.Sc. (Lond.), Ph.D. (Cantab.), *Lecturer in Agricultural Zoology*

T. Jagaratnam, B.A. (Cey.), M.S.A. (Tor.), *Lecturer in Agricultural Economics*

F. S. C. P. Kalpage, B.Sc. (Cey.), Ph.D. (Lond.), Dip.Agr.Chem. (Leeds), A.R.I.C., *Lecturer in Agricultural Chemistry*

H. Karunajeewa, B.Sc. (Cey.), M.S. (Texas A & M), *Lecturer in Animal Husbandry*

I. St. Elmo Samarakira, B.Sc. (Cey.), M.S. (Penn.), Ph.D. (Manit.), *Lecturer in Agricultural Botany*

Y. D. A. Senanayake, B.Sc.Agr. (Cey.), M.S. (Louis.), *Lecturer in Horticulture*

S. T. Seneviratne, B.Sc.Agr. (Cey.), M.Sc., Ph.D. (Calif.), *Lecturer in Agronomy*

V. E. A. Wikramanayake, B.Sc.Agr. (Bom.), M.S.A. (Tor.), A.M.I.Agr.E., *Lecturer in Agricultural Engineering*

Department of Veterinary Science

C. A. McGaughey, M.A. (Cantab.), M.Sc. (Manc.), M.R.C.V.S., D.V.S.M. (Victoria), *Professor of Veterinary Science*: bacterial, fungal and viral diseases of animals

P. L. G. de Silva, Ph.D. (Cantab.), B.V.Sc. (Cey.): animal husbandry and genetics

S. T. Fernando, B.V.Sc. (Cey.): helminthology of farm animals, immunology of helminth infections

G. E. Kodituwakku, Ph.D. (Lond.), B.V.Sc. (Cey.), D.T.V.M. (Edin.): surgery of animals

C. St. George, B.V.Sc. (Madr.), M.Sc. (Wis.), Dip.Dy.Sci. (N.Z.): dairy bacteriology and technology

CEYLON

K. A. D. P. Seneviratna, Ph.D. (Lond.), B.V.Sc. (Madr.), M.R.C.V.S.: protozoal and parasitic diseases of animals

E. A. Wijewantha, Ph.D. (Lond.), B.V.Sc. (Cey.): clostridial infections of animals, soil bacteriology

Department of Veterinary Anatomy and Physiology

L. A. P. Brito Babapulle, B.Sc. (Lond.), M.R.C.V.S., D.T.V.M.: anatomy of domestic animals

S. D. A. Fernando, B.V.Sc. (Cey.): anatomy of domestic animals

J. B. Jayasinghe, Ph.D. (Aberd.), B.V.Sc. (Cey.): ruminant digestion, animal nutrition, electrocardiography

GHANA

MINISTRY OF AGRICULTURE

Division of General Agricultural Services

P.O. Box 299, Accra. 'Grams: Agrestic

C. A. Dadey, M.A., Dip.Agr., D.T.A., *Chief Agricultural Officer*
D. C. P. Evans, B.Sc.Agr., D.T.A., *Deputy Chief Agricultural Officer*

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R. Mulholland, B.Sc.Agr.
S. B. Nyame-Adu, B.Sc., D.T.A.: annual crops, animal husbandry
J. H. N. Pitman, M.A., D.T.A.
C. E. Tagoe, B.Sc.Agr., D.T.A.: rice, bananas, citrus, oil palms, coconuts, animal husbandry
H. E. Thompson, D.I.C.T.A.: annual crops, coffee, oil palm, animal husbandry

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G. K. A. Buahin, B.Sc.Sp.Zoo.: pests of stored products
E. V. Doku, B.Sc.Agr.: plant breeding
K. A. Haizel, B.Sc.Agr., D.T.A.: annual crops
M. S. O. Nicholas, B.Sc.Agr., D.T.A.: annual crops, animal husbandry
J. M. A. Otoo, B.Sc., M.Sc.: crops, animal husbandry, oil palms, bananas, citrus, cola
H. R. B. A. Prempeh, D.S.A., N.D.D., S.D.D.H., A.M.I.B.A.E.: animal husbandry

AGRICULTURAL OFFICERS

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E. Abrahams, B.Sc.Agr., M.A.: publications and information
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E. W. Aguudu, B.Sc.Agr.: poultry
J. A. Agyare, B.Sc.Agr.: crops and agricultural extension
J. E. Ako-Nai, B.Sc.Agr.: soil conservation, agronomy
S. Y. Amanquah, B.Sc.Agr.: annual crops, animal husbandry
A. N. Aryeetey, B.Sc.Agr.: crops, animal husbandry
A. Asare Nyarko, B.Sc.Gen., B.Sc.Sp.: plant breeding
T. B. Biney, B.Sc.Agr.: agricultural education
D. B. Boakye, B.Sc.Agr.: annual crops, animal husbandry
E. S. M. Commodore, B.Sc.Agr.: annual crops
J. C. K. Fumi-Fianawle, B.Sc.Agr.Edn., M.Sc.Agr.: range management and dairying
A. K. Ghansah, B.Sc.Agr.: soil conservation, agronomy
F. N. Ghartey, B.Sc.Agr.: soil conservation, agronomy
E. K. Hagan, B.Sc.Agr., M.A.Soc.: crops, soil conservation
A. T. Halm, B.Sc.RuL.Sc.: pasture research
T. O. Mills, B.Sc.Agr.: crops
G. F. Nsowah, B.Sc.Agr.: crops, animal husbandry, rubber
E. K. Okpoti, B.Sc.Agr.: annual crops, animal husbandry
M. D. Osafu, B.Sc.Agr.: crops, animal husbandry, soil conservation
H. Quartey-Papafio, B.Sc.Agr.: soil conservation, agronomy
W. Godfrey Sam-Aggrey, B.Sc.Agr.: crops, rubber, oil palms
M. Twum, B.Sc.Agr.: crops, animal husbandry
B. A. A. Williams, B.Sc.Agr.Econ.: agricultural education
A. B. Williams-Baffoe, B.Sc., M.A.: crops, bananas, citrus, rubber, animal husbandry

GHANA

PRINCIPAL AGRICULTURAL EDUCATION OFFICER
E. Bortei-Doku, D.I.C.T.A.

SENIOR AGRICULTURAL EDUCATION OFFICER
N. Yenli

AGRICULTURAL ENGINEER
K. B. Dsane-Selby, A.M.I.Mech.E., A.M.S.Eng.

Cocoa Industry Division

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E. Quartey-Papafio, B.Sc.Agr., Dip.Agr., D.T.A., *Chief Cocoa Officer*
D. F. Edwards, B.Sc.Hort., D.T.A., *Deputy Chief Cocoa Officer*
A. A. Laryea, M.A., D.T.A., *Principal Agricultural Officer*
R. A. Silverlock, N.D.A., Dip.Agr., D.T.A., *Cocoa Agronomist*, P.O. Box 5,
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Scientific Services Division

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W. K. Able, B.Sc., M.Sc., Ph.D., *Deputy Chief Scientific Officer*
F. S. Ablorh, B.A., *Soil Survey Officer*
S. V. Adu, B.Sc., *Soil Survey Officer*
P. M. Ahi, M.A., *Soil Survey Officer*
P. Appiahgyei-Danku, B.Sc.Agr., *Soil Survey Officer*
G. K. Asamoah, B.Sc., M.Sc., *Soil Survey Officer*
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GHANA

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J. Gordon, B.Sc., B.Agr.: comparative growth rates of Amazon and Amelonado cocoa and responses to fertilizers

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I. Watson, B.Sc. Hons., *Statistician*: general investigations on field crops, breeding of livestock, poultry

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Van Thean Kee, B.Sc. Hons.: in charge, field investigations

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Utilization

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K. Nixon, B.Sc., M.R.C.V.S., *Principal Veterinary Research Officer*: animal husbandry and nutrition
M. M. Sewell, M.A., Vet.M.B. (Cantab.), M.R.C.V.S., *Veterinary Research Officer*: helminthic diseases of livestock
J. A. Hart, B.Sc., *Parasitologist*: helminthic diseases of livestock
M. M. Ikeme, B.Sc., *Parasitologist*: helminthic diseases of livestock
F. G. Peers, Sc.D., M.A. (Cantab.), *Biochemist*: studies on nutritional diseases and bacterial metabolism

Division of Bacteriology

I. Macadam, Ph.D., B.Sc., M.R.C.V.S., Dip.Bact. (Lond.), *Acting Principal Veterinary Research Officer*: bacterial diseases of livestock

FEDERATION OF NIGERIA

- E. O. Ezebuiro, B.Vet.Med., M.R.C.V.S., Dip.Bact. (Lond.), *Veterinary Research Officer*: bacterial diseases of livestock
R. M. Griffin, B.Vet.Med., M.R.C.V.S., Dip.Bact. (Lond.), *Veterinary Research Officer*: bacterial discases of livestock
T. Moren, Leg.Vet. (Sweden), *Veterinary Research Officer*

Training Division

- R. M. Gambles, M.A., B.Sc., M.R.C.V.S., *Principal, Veterinary School*
Miss H. J. Chaplin, M.R.C.V.S., *Veterinary Education Officer*: veterinary education and artificial insemination
A. A. Forsyth, M.R.C.V.S., D.V.S.M., *Veterinary Education Officer*: veterinary education and in charge of Clinic

Division of Virology

- R. H. Johnson, B.V.Sc., M.R.C.V.S., Dip.Bact. (Lond.), *Principal Veterinary Research Officer*: virus diseases of livestock
R. W. Crowther, B.Sc., M.R.C.V.S., *Veterinary Research Officer*: virus diseases of livestock
V. W. Smith, B.Sc., M.R.C.V.S., *Veterinary Research Officer*: virus discases of livestock

Lagos Centre

- D. Slater, M.R.C.V.S., D.T.V.M., *Veterinary Research Officer*: disease control

EASTERN REGION OF NIGERIA

MINISTRY OF AGRICULTURE

Agriculture Division

- Ministry of Agriculture, Eastern Nigeria, Enugu. Tel.: 2734. 'Grams: Agricola
G. E. O. Okiy, B.Sc.Hons. (Edin.), *Chief Inspector of Agriculture*: general agricultural research and administration
D. R. E. Jackson, M.A.Agr. (Cantab.), *Deputy Chief Inspector of Agriculture*: general agricultural research and administration

RESEARCH SECTION

- Ministry of Agriculture, Eastern Nigeria, Umudike, Umuahia-Ibeku. Tel.: 7.
'Grams: Agrisearch (Umuahia)
P. Tuley, B.Sc.Hons. (Brist.), *Principal Research Officer*: research on cocoa and citrus
V. O. Chukwueke, B.Sc.Agr. (Corn.), *Senior Specialist Officer*: agronomy
L. S. O. Ene, B.Sc.Agr. (Lond.), *Specialist Officer*: plant breeding
M. L. Jerath, M.Sc. (Pb.), Ph.D. (Oregon), *Specialist Officer*: entomology
A. O. Nnodi, B.Sc.Agr. (Lond.), *Soil Surveyor*
J. K. Obi, *Specialist Officer*: statistics
C. C. H. Obihara, B.Sc. (Leic.), *Specialist Officer*: soil chemistry
G. T. Okonkwo, B.Sc. (Lond.), *Specialist Officer*: agronomy
A. O. A. Otisi, A.R.C.S.T., A.R.I.C. (Glas.), *Specialist Officer*
S. C. Singha, B.Sc., *Laboratory Technologist*

SCHOOL OF AGRICULTURE

- Ministry of Agriculture, Eastern Nigeria, Umudike, Umuahia-Ibeku. Tel.: 7.
'Grams: Agricol (Umuahia)
E. W. Findlay, B.S.A. (Tor.), *Principal*: training of junior technical staff

FEDERATION OF NIGERIA

NORTHERN REGION OF NIGERIA
MINISTRY OF AGRICULTURE

Regional Research Station

Samaru, Zaria. Tel.: Zaria 2031. 'Grams: Agrisearch

G. M. Higgins, B.Sc., *Officer-in-Charge*

K. A. Watson, B.Sc., *Principal Research Officer*

AGRONOMY SECTION

P. R. Goldsworthy, B.Sc., *Officer-in-Charge*: field experimentation

R. M. Meredith, B.Sc.

P. Walker, B.A.: statistics

ANIMAL AND PASTURE SECTION

J. H. Davies, B.Sc., *Officer-in-Charge*

R. J. Thorpe, B.Sc.: animal nutrition

BOTANY SECTION

D. L. Curtis, B.Sc., *Officer-in-Charge*: cereal breeding

D. J. Andrews, B.Sc.: cereal breeding

A. Bruno, Dott.Sc. (Padova): horticulture, fruit trees

*J. L. Palmer, B.Sc.: cotton breeding

C. Pyne, M.Sc.: plant pathology

W. R. Stanton, B.Sc., Ph.D.: plant breeding—grain legumes

R. E. Wyatt, B.Sc.: plant pathology

CHEMISTRY SECTION

T. B. Miller, B.Sc., Ph.D., *Officer-in-Charge*: animal nutrition

P. H. Goldberg, B.Sc.: analyst

D. R. Horns, B.Sc.: soil phosphate studies

R. G. Heathcote, B.Sc.: soil sulphur studies

COTTON BREEDING SECTION

*J. M. Munro, B.Sc., *Officer-in-Charge*

*B. E. Costelloe, B.Sc.: cotton breeding

*M. Dransfield, B.Sc., Ph.D.: cotton pathology

CROP PHYSIOLOGY SECTION

*D. A. Lawes, B.Sc.: soil water studies and meteorology

W. M. Steele, B.Sc.

ENGINEERING SECTION

D. W. M. Haynes, B.Sc.: ox-drawn and tractor implements

ENTOMOLOGY SECTION

*M. A. Choyce, B.Sc., *Officer-in-Charge*: cotton pests

R. H. Booker, B.Sc.: groundnut aphid

P. H. Giles, B.Sc.: pests of stored products

*D. J. de B. Lyon, B.Sc.: cotton pests

SOIL SURVEY SECTION

D. M. Ramsay, B.Sc., Ph.D., *Officer-in-Charge*

P. N. de Leeuw, I.i.

*Members of the Empire Cotton Growing Corporation

FEDERATION OF NIGERIA

W. A. Hope, B.Sc.
K. Klinkenberg, Geog. Drs.
R. A. Pullan, M.Sc.
R. L. Story, M.A.
P. R. Tomlinson, B.Sc.

Regional Research Sub-Station, Mokwa

C. Harkness, B.Sc., *Officer-in-Charge*: groundnut breeding
J. A'Brook, B.Sc.: entomology, groundnut aphid
D. McDonald, B.Sc.: plant pathology
W. C. Stonbridge, B.Sc.: plant breeding, sesame and soyabean

Regional Research Sub-Station, Kano

R. W. Gibbons, B.Sc.: groundnut breeding
D. A. Guymer, B.Sc.: plant breeding

MINISTRY OF ANIMAL AND FOREST RESOURCES

P.M.B. 2012, Kaduna, Northern Nigeria. Tel.: 2141. 'Grams: Secanfor
D. E. Macgregor, B.Sc. (Lond.), M.R.C.V.S., *Chief Veterinary Officer*

VETERINARY INVESTIGATION AND TRAINING CENTRE

P.M.B. 2005, Kaduna, Northern Nigeria. Tel.: 3180. 'Grams: Secanfor
K. J. R. Maclennan, M.B.E., B.Sc. (Edin.), M.R.C.V.S., *Assistant Chief Veterinary Officer*
W. W. Kirkby, M.B.E., B.Sc. (Lond.), M.R.C.V.S., *Principal Veterinary Officer*
W. Ferguson, M.R.C.V.S., D.T.V.M., *Principal Veterinary Officer*
A. Mahood, B.Sc. (Belf.), *Senior Entomologist*

WESTERN REGION OF NIGERIA

MINISTRY OF AGRICULTURE AND NATURAL RESOURCES

Agricultural Research Division

Moor Plantation, Ibadan. Tel.: 23621. 'Grams: Caro
B. O. E. Amon, B.Sc., B.Agr. Hons., *Acting Chief Agricultural Research Officer*:
soil fertility and plant nutrition
E. F. I. Baker, B.Sc. Hons., *Research Officer*: arable crop husbandry
E. O. Jayebo, B.Sc., M.Sc.: laboratory analysis
R. F. Montgomery, B.Sc. Hons., *Soil Scientist*: soil classification and land use
planning
J. Odetoyinbo, B.Sc., Ph.D., *Research Officer*: entomological problems associated
with tree and arable crops
O. L. Opeke, B.Sc., Ph.D.: plant breeding (arable crops)
J. H. Simons, B.Sc. Hons., A.I.C.T.A., *Research Officer*: mycological problems
associated with tree and arable crops (cocoa, maize)
A. J. Smyth, M.A., B.A. Hons., *Soil Scientist*: soil classification and land use
planning

AGENCY FOR INTERNATIONAL DEVELOPMENT/INTERNATIONAL DEVELOPMENT SERVICES

A. A. Adegbola, B.Sc. Agr. (Lond.), M.S. (Rutgers): grassland research
F. E. Caveness, B.A., Ph.D. (Oreg.): nematology
J. Craig, B.S., M.S., Ph.D. (Ill.): maize breeding

FEDERATION OF NIGERIA

M. A. Fennell, Ph.D. (Rutgers): agronomy; legumes
F. A. Gowen, B.Sc. (N.H.), M.Sc., Ph.D. (Minn.): pulse-legume breeding
K. E. Johnson, B.S., M.S., Ph.D. (Mich.), *Soil Chemist*: trace elements

UNIVERSITIES UNIVERSITY COLLEGE

Ibadan, Nigeria. Tel.: 22841. 'Grams: University

Faculty of Agriculture

DEPARTMENT OF AGRICULTURE

R. J. McIlroy, M.Sc., Ph.D., F.R.I.C., *Professor of Agriculture, Dean of Faculty and Head of Department*: grassland research, cash crops
D. H. Hill, D.V.M., M.R.C.V.S., *Senior Lecturer*: animal production and hygiene
A. A. A. Fayemi, M.Sc., Ph.D., *Lecturer*: food crops
R. T. Lewis, B.Sc.Agr., M.Sc., A.M.I.Agr.E., *Lecturer*: agricultural mechanization
A. N. A. Modebe, M.Agr.Sc., Ph.D., *Lecturer*: animal production, pigs and poultry

SUB-DEPARTMENT OF AGRICULTURAL BIOLOGY

G. H. Caswell, B.Sc., A.R.C.S., *Senior Lecturer*: entomology and grain storage
B. Hopkins, B.Sc., Ph.D., *Lecturer*: agricultural botany, ecology
R. N. Smith, B.Sc., Ph.D., *Lecturer*: plant pathology

SUB-DEPARTMENT OF AGRICULTURAL CHEMISTRY AND SOILS

H. Vine, B.Sc. Hons., Ph.D., A.I.C.T.A., A.R.I.C., *Senior Lecturer*: soil fertility
F. A. Olubajo, M.Sc., *Research Fellow in Agricultural Biochemistry*: animal nutrition

SUB-DEPARTMENT OF AGRICULTURAL ORGANIZATION

H. A. Oluwasanmi, M.A., Ph.D., *Senior Lecturer*: agricultural economy, land tenure systems
M. Upton, B.Sc.Agr., M.Sc., Dip.Farm Man., *Lecturer*: farm management
Q. B. Anthonio, B.Sc.Agr., *Research Fellow in Agricultural Economics*: agricultural economic survey

Faculty of Science

DEPARTMENT OF BOTANY

E. Njoku, B.A., Ph.D. (Lond.), M.Sc. (Manc.), *Professor and Head of Department*: plant physiology, development and morphogenesis
C. C. Amobi, B.Sc. (Lond.), Dip.Ed. (R'dg.), *Lecturer*: periodicity of wood formation in Nigerian trees
M. J. Carlile, M.A., Ph.D. (Cantab.), *Senior Lecturer*: fungi, especially physiology of growth and reproduction and responses to light
G. Jackson, B.Sc. (Sheff.), Dip.Agr.Sc. (Cantab.), *Lecturer*: ecology, mangrove swamp vegetation; growth and anatomy of *Avicennia nitida*
J. R. S. Lawton, B.Sc. (Lond.), M.I.Biol., *Lecturer*: translocation of organic compounds in the phloem; *Dioscorea* species used at present
S. N. C. Okonkwo, B.Sc. (Lond.), *Research Fellow*: physiology of witchweed parasitism

DEPARTMENT OF ZOOLOGY

N. Bolwig, M.Sc., D.Sc. (Copen.), *Professor and Head of Department*: primate behaviour

FEDERATION OF NIGERIA

- J. F. Barker, B.Sc., Ph.D. (Sheff.), *Lecturer*: cytology of natural populations
J. H. Elgood, M.A. (Cantab.), M.I.Biol., *Senior Lecturer*: ecological studies of avian fauna
J. C. Ene, B.Sc., Ph.D. (Lond.), *Lecturer*: mantids
Miss M. R. Hill, B.Sc., Ph.D. (Lond.), *Lecturer*: ecological studies of estuarine fauna
R. Muller, B.Sc., Ph.D., *Lecturer*: parasitology
C. I. O. Olaniyan, B.Sc., Ph.D. (Lond.), *Lecturer*: plankton of Lagos lagoon and harbour
A. H. Parker, M.Sc. (Birm.), Ph.D. (Glas.), M.I.Biol., *Senior Lecturer*: insect behaviour
P. Ward, B.Sc. (Liv.), *Research Fellow*: *Quielea*

UNIVERSITY OF IFE

Ibadan Branch, Ibadan. 'Grams: Varsity, Ife

DEPARTMENT OF AGRICULTURE

V. A. Oyenuga, B.Sc., Ph.D. (Dunelm), F.R.I.C., *Professor*: animal nutrition

DEPARTMENT OF BOTANY

N. Polunin, M.A., D.Phil. (Oxon.), M.S. (Yale), F.L.S., F.R.G.S., F.R.H.S., M.I.Biol., *Professor*: plant ecology, taxonomy, phytogeography, aerobiology

UNIVERSITY OF NIGERIA

Nsukka. Tel. Nsukka 50. 'Grams: Nigersity

College of Agriculture

K. Lawton, B.Sc., Ph.D., *Head*: soil chemistry
B. A. C. Enyi, M.Sc.: crop botany
B. N. Okigbo, B.Sc., M.Sc., Ph.D.: plant genetics, statistics
C. Oyolu, B.Sc., Ph.D.: crop botany
G. Tewari, B.Sc., M.Sc., Ph.D.: legume agronomy

College of Science

DEPARTMENT OF BOTANY AND ENTOMOLOGY

E. C. Martin, B.Sc., M.Sc., Ph.D., *Head*: insect control, pollination
A. A. Okoye, B.Sc., M.Sc.: plant morphology

DEPARTMENT OF ZOOLOGY

H. L. Sharma, M.Sc., Ph.D., *Head*: physiology of frog
I. U. Akpabio, B.Sc.: physiology
I. Okpala, B.Sc., M.Sc., Ph.D.: parasitology, malaria

WEST AFRICAN STORED PRODUCTS RESEARCH UNIT

Federal Ministry of Commerce and Industry, Lagos. Tel.: 24504. 'Grams: Waspru

HEADQUARTERS, LAGOS

L. A. W. Hayward, B.Sc., A.R.I.C., *Principal Scientific Officer and Officer-in-Charge*: yam respiration
M. J. Rollings, B.Sc., *Scientific Officer*: pests of dried fish

IBADAN LABORATORY

J. Riley, B.Sc., D.I.C., *Senior Scientific Officer*: cocoa and grain storage
M. A. Cornes, B.Sc., A.R.C.S., *Scientific Officer*: cocoa and grain storage

FEDERATION OF NIGERIA

KANO LABORATORY

P. F. Prevett, B.Sc., A.R.C.S., D.I.C., *Senior Scientific Officer*: storage of groundnuts, beans and corn; researches on Bruchidae
D. Halliday, B.Sc., A.R.I.C., *Senior Scientific Officer*: insecticide analysis and testing techniques
Miss H. M. Walker, B.Sc., *Scientific Officer*: storage of groundnuts and corn

PORT HARCOURT LABORATORY

E. A. Simmons, A.R.I.C., *Scientific Officer*: storage of palm oil, palm kernels, copra and dried fish

SIERRA LEONE DEPARTMENT OF AGRICULTURE

Njala, Via Mano

- D. O. Williams, B.Sc.Agr. (Edin.), Dip.Agr. (Cantab.), D.T.A., *Principal Agricultural Officer (Research)*
H. D. Tindall, M.Sc. Hort. (R'dg.), F.L.S., N.D.H., A.I.P.A., *Horticulturist*
R. F. Allbrook, B.Sc.Agr.Chem. (Dunelm), *Chemist*
T. S. Bakshi, B.Sc. (Bom.), M.Sc. (Sanger), Ph.D. (Wash.), *Systematic Botanist and Ecologist*
M. P. Rushton, B.Sc.Agr. (Dunelm), D.T.A., *Entomologist*

TANGANYIKA MINISTRY OF AGRICULTURE

Division of Research

- P.O. Box 9071, Dar-es-Salaam, Tanganyika. Tel.: Dar-es-Salaam, 22586.
'Grams: Agriculture
- A. C. Evans, B.Sc. (Brist.), Ph.D. (Lond.), D.I.C., *Director of Research*: organization of research; soil fertility and agronomy
H. G. Hutchison, B.Sc., Ph.D., *Assistant Director of Research*: livestock research other than diseases
T. O. Robson, B.Sc. (Rand.), *Senior Research Officer*: pasture research
B. C. Alkhurst, M.B.E., B.Sc. (R'dg.), *Senior Research Officer*: general agronomy, particularly tobacco
E. C. Diekmahns, B.Sc. (Glas.), Dip.Agr.Sc. (Cantab.), *Senior Research Officer*: agronomy of sisal
J. B. D. Robinson, B.Sc. (Lond.), F.R.I.C., *Senior Research Officer*: agronomy of coffee
B. Anderson, M.Sc.Agr. (R'dg.), *Chemist*: soil fertility
G. D. Anderson, B.Sc., Ph.D. (Dunelm), *Chemist*: soil fertility
A. K. Auckland, B.Sc. (Dunelm), Dip.Agr.Sc. (Cantab.), D.T.A. (Trin.), *Botanist*: selection and breeding of soya and sesame
J. N. Auckland, B.Sc. (R'dg.), D.T.A. (Trin.), *Agronomist*: agronomy of coffee
M. Bigger, B.A. (T.C.D.), D.T.A. (Trin.), *Entomologist*: pests of cashew, control of termites
D. A. Burdckin, B.A. (Cantab.), *Plant Pathologist*: diseases of coffee
P. K. S. Clinton, B.Sc. (Sheff.), *Plant Pathologist*: diseases of seed beans and general pathology
M. P. Collinson, B.A. (R'dg.), Dip.Agr.Econ. (R'dg.), *Agronomist*: economics of small farms
J. Evans, B.Sc. (Wales), Dip.Agr.Sc. (Wales), *Chemist*: soil fertility
L. M. Fernie, *Horticulturist*: coffee agronomy and breeding
R. A. Haggarty, B.Sc. (Lond.), Dip.Agr.Sc. (Cantab.), D.T.A. (Trin.), *Agronomist*: general agronomy
B. L. Honess, B.Sc. (R'dg.), D.T.A. (Trin.), *Agronomist*: horticultural research
D. Hopkinson, B.A. (Oxon.), Dip.Agr.Sc. (Cantab.), D.T.A. (Trin.), *Agronomist*: agronomy of sisal
B. G. Houston, B.Sc.Agr. (Aberd.), Dip.Agr.Sc. (Cantab.), D.T.A. (Trin.), *Botanist*: selection and breeding of wheat for rust resistance and short-term maize varieties

TANGANYIKA

- J. C. Macartney, B.Agr.Sc. (Belf.), *Agronomist*: haricot beans, and general agronomy
H. W. Mitchell, B.Sc. (Lond.), D.T.A. (Trin.), *Agronomist*: coffee
P. J. Northwood, B.Sc. (R'dg.), *Agronomist*: cashew
M. A. Owen, B.Sc. (Wales), Dip.Agr.Sc. (R'dg.), D.T.A. (Trin.), *Pasture Research Officer*: rangeland management
W. T. H. Peregrine, M.Sc. (Wales), *Plant Pathologist*: diseases of sisal
I. A. D. Robertson, B.Sc. (Aberd.), *Entomologist*: biology of American bollworm and coffee berry borer
M. A. Scaife, B.A. (Cantab.), Dip.Agr.Sc. (Cantab.), D.T.A. (Trin.), *Agronomist*: general agronomy
G. D. Scott, B.Sc. (Rand.), *Pasture Research Officer*: improvement and establishment of pastures
G. A. Semiti, B.Sc. (Makerec), *Botanist*: breeding and selection of grain legumes
S. Sreedharan, B.Sc. (Trav.), *Experimental Officer*: statistical studies
G. Swaine, B.Sc. (Sheff.), *Entomologist*: biology and control of pests and seed beans, pyrethrum and cotton
R. G. Tapley, B.Sc. (Lond.), *Entomologist*: biology and control of coffee pests
A. Tsakaris, B.Sc. (Poona), *Experimental Officer*: general agronomy
D. J. Turner, B.Sc. (R'dg.), Ph.D. (Edin.), *Botanist*: maize breeding and general agronomy
B. Walker, B.Sc. (Nott.), Dip.Agr.Sc. (R'dg.), D.T.A. (Trin.), *Agronomist*: general agronomy, particularly tobacco
D. R. W. Watson, B.Sc., *Plant Pathologist*: general plant pathology

Division of Veterinary Services

- P.O. Box 9152, Dar-es-Salaam, Tanganyika. Tel.: 22504/5. 'Grams: Civet
J. E. R. Roe, O.B.E., M.R.C.V.S., *Adviser on Animal Health*
J. Robson, B.Sc., M.R.C.V.S., *Chief Veterinary Research Officer*
B. McCulloch, M.R.C.V.S., *Veterinary Research Officer*

MINISTRY OF LANDS, FORESTS AND WILDLIFE

Forest Department

- P.O. Box 426, Dar-es-Salaam, Tanganyika
R. G. Sangster, B.Sc. (Aberd.), *Chief Conservator of Forests*
J. M. Bryce, B.A. (Oxon.), *Utilization Officer*
R. L. Willan, B.A. (Oxon.), *Silviculturist*

THE WEST AFRICAN RESEARCH ORGANIZATION WEST AFRICAN RESEARCH OFFICE

P.O. Box 1117, Accra, Ghana. Tel.: 63994-6. 'Grams: Ofwac, Accra
It has now been agreed to dissolve the Organization, and the aim is to arrange for
the Governments concerned to take over the institutes of research in their countries by
the 1st October, 1962.

J. F. G. Sykes, O.B.E., *Administrator*
P. J. D. Nesbitt-Hawes, *Deputy Administrator*

WEST AFRICAN COCOA RESEARCH INSTITUTE

Tafo Station—Headquarters

P.O. Box 8, Tafo, Ghana. Tel.: 51. 'Grams: Direscao

ADMINISTRATION

J. W. Blencowe, Ph.D., *Acting Director and Plant Pathologist*

AGRONOMY DIVISION

T. H. R. Hall, B.Sc., *Senior Agronomist*: cocoa agronomy (spacing and establishment); vegetative propagation

R. W. Smith, B.Sc., *Agronomist*: fertilizers and irrigation

STATISTICAL DIVISION

C. de Jonge, I.i., A.R.N.S.A.S., *Statistician*: adviser on design and analysis of experiments

ENTOMOLOGY DIVISION

J. A. Dunn, M.Sc., Ph.D., *Senior Entomologist*: aphids and capsids

R. G. Donald, B.Sc., A.I.C.T.A., M.I.Biol., F.R.E.S., *Senior Entomologist*: mealybug studies

B. M. Gerard, Ph.D., A.R.C.S., *Entomologist*: pollination of *T. cacao*; marmara (pod-miner); general insect ecology in cacao plantations, especially leaf-hoppers and ants

CHEMISTRY DIVISION

R. H. Kenten, B.Sc., A.R.I.C., *Senior Chemist*: cocoa viruses and processing of cocoa

D. K. Acquaye, B.Sc., Ph.D., *Soil Chemist*: soil fertility and nutrition of cocoa

J. C. Burridge, M.A., B.Sc., *Spectrographer*: spectrographic analysis in relation to cocoa nutrition

BOTANY DIVISION

D. R. Glendinning, B.Sc., *Plant Breeder*: general breeding and selection

E. J. A. Asomaning, B.Sc., M.Sc., Ph.D., *Plant Physiologist*: mineral nutrition and general physiology

R. G. Lockard, B.S.A., Ph.D., *Plant Physiologist* (on loan to WACRI on Canadian Technical Assistance to Ghana Government Scheme): mineral nutrition

Miss V. A. Martison, B.Sc., *Plant Breeder*

PATHOLOGY DIVISION

A. L. Wharton, B.Sc., Dip.Agr.Sc., M.I.Biol., D.T.A., *Senior Plant Pathologist*: pathogens of cocoa

A. Attafuah, *Plant Pathologist*: virus diseases of cocoa

A. A. F. Brunt, B.Sc., *Plant Pathologist*: virus diseases of cocoa

Ibadan Station

P.M.B. 5042, Ibadan, Nigeria. Tel.: 22821/37. 'Grams: Wacri

T. W. Tinsley, B.Sc., Ph.D., M.I.Biol., *Deputy Director*: plant virus diseases

THE WEST AFRICAN RESEARCH ORGANIZATION

- P. F. Entwistle, B.Sc., A.R.C.S., F.R.E.S., *Entomologist*: stem borers and other cocoa pests
G. H. Freeman, M.A., Dip.Stat., Ph.D., *Statistician/Agronomist*: statistical design and analysis, with special reference to experiments on cocoa; nursery trials with cocoa seedlings
E. C. Hislop, B.Sc., D.P.P., *Plant Pathologist*: control of black pod disease (*Phytophthora palmivora*)
J. F. Longworth, M.Sc., M.I.Biol., *Agronomist*: establishment trials; virus tolerant varieties of cocoa
N. I. C. Nwachukwu, B.Sc., *Plant Physiologist*
J. T. Swarbrick, B.Sc., S.T.A., Dip.Agr., D.T.A., M.I.Biol., *Agronomist*: cocoa agronomy-studies on establishment and environmental factors
H. Toxopeus, I.i., *Plant Breeder*: cocoa breeding
M. Wessel, I.i., *Chemist*: fertilizer applications to cocoa
Mrs. P. C. Wessel-Riemens, I.i., *Virologist*: mechanical transmission of cocoa viruses
G. Weststeinjin, I.i., *Mycologist*: fungal diseases of cocoa, particularly strains of *Phytophthora palmivora*

WEST AFRICAN INSTITUTE FOR OIL PALM RESEARCH

Headquarters

Private Mail Bag 1030, Benin City, Western Nigeria. Tel.: 53. 'Grams: Palms, Benin

C. W. S. Hartley, C.B.E., M.A., Dip.Agr.Sc., A.I.C.T.A., *Director*
D. L. Downie, B.Sc., *Deputy Director*

AGRONOMY DIVISION

- J. S. Gunn, B.Sc., Dip.Agr., *Senior Agronomist*: overall supervision of field experiments in West Africa with particular reference to oil palm responses to fertilizers
J. M. A. Sly, B.Sc., A.R.C.S., Dip.Agr.Sc., D.T.A., *Agronomist*: study of irrigation in pre-nurseries; nurseries; establishment of leguminous cover crops; leaf and flowering observations
R. D. Sheldrick, B.A., A.I.C.T.A., *Agronomist*: general agronomic studies with particular reference to herbicides and replanting

PLANT BREEDING DIVISION

- L. D. Sparnaaij, Dr.Ir., *Senior Plant Breeder*: selection and breeding of the oil palm and related botanical studies
T. Menendez, B.Sc., *Plant Breeder*: inheritance, disease resistance and anatomical studies
G. Blaak, Ir., I.i., M.Sc., *Plant Breeder*: selection techniques with particular reference to oil content

PLANT NUTRITION

- K. W. Smilde, Dr.Ir., *Plant Physiologist (Nutrition)*: nutrient deficiencies in the oil palm with particular reference to leaf composition and yield

PLANT PATHOLOGY

- J. S. Robertson, B.Sc., Dip.Agr.Sc., D.T.A., *Plant Pathologist*: investigations on cause and control of diseases of the oil palm

PLANT PHYSIOLOGY

- A. R. Rees, B.Sc., *Plant Physiologist*: studies on germination and seed storage; growth analysis; photosynthesis; water relationships of the oil palm in relation to climatic factors

THE WEST AFRICAN RESEARCH ORGANIZATION

RESEARCH ENGINEERING DIVISION

S. C. Nwanze, D.L.C.Chem.Eng., A.M.I.Chem.E., *Research Engineer*: study of palm oil and kernel processing methods and bleachability

SOIL CHEMISTRY DIVISION

P. B. H. Tinker, B.Sc., Ph.D., A.R.I.C., *Soil Chemist*: soil studies in relation to fertilizcr requirement

St. C. M. Forde, M.S.A., *Soil Chemist*: soil phosphorus studies

STATISTICS DIVISION

L. C. Chapas, B.Sc., Dip.Math.Stat., *Statistician*: design and analysis of field and laboratory experiments; meteorology and mechanical processing of data

Sub-Station

Abak, Eastern Nigeria

A. C. Zevcn, Ir., I.i., *Agronomist*: study of the economics of the natural palm grove

Sub-Station

Njala, Sierra Leone

P. B. Tatham, B.Sc., *Agronomist*: general agronomic studies of the oil palm

WEST AFRICAN INSTITUTE FOR TRYPANOSOMIASIS RESEARCH

Headquarters

Kaduna, Northern Nigeria. Tel.: 2771. 'Grams: Waitr, Kaduna

K. C. Willett, M.A. (Oxon.), M.B., B.S. (Lond.), M.R.C.S., L.R.C.P., *Director*
T. M. Leach, M.R.C.V.S., D.V.S.M., *Deputy Director*

ENTOMOLOGY SECTION

A. M. Jordan, B.Sc., Ph.D. (Dunelm), *Principal Research Officer*: laboratory and field studies on tsetse flies

D. A. T. Baldry, B.Sc. (Lond.), *Research Officer*: laboratory and field studies on insecticidal control of tsetse flies

MEICAL SECTION

H. J. C. Watson, M.R.C.S., L.R.C.P., *Senior Principal Research Officer*: trials with trypanocidal drugs, reservoir hosts of human sleeping sickness

Sub-Station

Vom, Plateau Province, Northern Nigeria. Tel.: 3. 'Grams: Waitr, Vom

VETERINARY SECTION

L. E. Stephen, D.V.M. (Tor.), M.R.C.V.S., D.A.P. & E., *Senior Principal Research Officer and Officer-in-Charge, Vom*: pathology of animal trypanosomiasis; morphological studies of trypanosomes; trials with trypanocidal drugs

A. R. Gray, M.A., Vet.M.B. (Cantab.), M.R.C.V.S., *Senior Research Officer*: antigenic variation and immunological relationships in trypanosomes

PROTOZOLOGY SECTION

D. G. Godfrey, B.Sc., Ph.D. (Lond.), *Principal Research Officer*: field surveys of animal trypanosomiasis; taxonomic studies on trypanosomes; lipid constituents of trypanosomes

THE WEST AFRICAN RESEARCH ORGANIZATION
WEST AFRICAN RICE RESEARCH STATION

Rokupr, Sierra Leone. 'Grams: Warrs, Rokupr
H. D. Jordan, O.B.E., B.Sc.Bot.Hons., A.R.C.S. (Lond.), A.I.C.T.A., *Director*
A. J. Carpenter, M.A.Nat.Sci. (Cantab.), Dip.Agr.Sc.: plant breeding of rice
R. Q. Craufurd, B.Sc.Agr.Bot.Hons.: plant breeding of rice
P. R. Hesse, B.Sc.Chem.Hons., Ph.D. (Lond.), F.R.I.C.: soil chemistry
J. W. O. Jefferey, B.Sc.Chem.Hons. (Exe.), A.R.I.C.: soil chemistry
E. H. Roberts, B.Sc.Bot.Hons., Ph.D. (Manc.): physiology of rice

WEST AFRICAN TIMBER BORER RESEARCH UNIT

Special lines of study: biology and control of insect pests of forest trees and timber.

Headquarters

P.O. Box 1917, Kumasi, Ghana. Tel.: 2376/7. 'Grams: Watbri, Kumasi
F. G. Browne, B.Sc.For. (Edin.), *Officer-in-Charge*

Sub-Station

Private Mail Bag 5054, Ibadan, Western Nigeria
H. Roberts, B.Sc., Ph.D., *Entomologist-in-Charge*

FEDERATION OF RHODESIA AND NYASALAND

MINISTRY OF AGRICULTURE

Administrative and General

P.O. Box 8025, Causeway, Southern Rhodesia. Tel.: Salisbury 61131.
'Grams: Fedagric, Salisbury
C. A. Murray, O.B.E., M.Sc.Agr., *Secretary*

ECONOMICS AND MARKETING

Tel.: Salisbury 61131
L. Uribe, B.Sc.Agr., *Chief Agricultural Economist*

Department of Research and Specialist Services

At P.O. Box 8025, Causeway.

Tel.: Salisbury 61131. 'Grams: Agrisearch, Salisbury
B. S. Ellis, Ph.D., D.I.C., F.R.I.C., *Director*
T. K. Sansom, B.Sc. (Rhodes), *Assistant Director*
G. H. Cooper, *Chief Poultry Officer*
J. C. Raath, M.Sc.Agr., *Chief Animal Husbandry Officer*
O. West, D.Sc. (Rand.), *Chief Pasture Research Officer*: pasture research and ecology of vegetation

HORTICULTURE

Tel.: Salisbury 61131. 'Grams: Agrisearch
C. N. Hayter, F.I.P.A. (S.A.), *Senior Horticulturist*: subtropical and deciduous fruit and vegetables

DAIRYING

Tel.: Salisbury 61131. 'Grams: Agrisearch
R. G. Jones, B.Sc., N.D.D., *Chief Dairy Officer*

At P.O. Box 8100, Causeway

SALISBURY AGRICULTURAL EXPERIMENT STATION
Tel.: Salisbury 29191. 'Grams: Agrisearch
A. G. H. Rattray, B.A. (Cantab.), *Senior Agriculturist, Officer-in-Charge*: hybrid maize and arable crops
V. J. Montague, M.Sc.Agr. (Nott.), *Potato Agronomist*: potato breeding and investigations
O. J. Olesen, M.Sc.Agr. (Copen.), *Plant Breeder*: summer and winter wheat varieties

BOTANY AND PLANT PATHOLOGY

Tel.: Salisbury 29191. 'Grams: Mycologist
G. R. Bates, Ph.D. (Lond.), *Chief Botanist and Plant Pathologist*: general plant diseases
R. B. Drummond, B.Sc., *Botanist*: taxonomy of African plants
G. W. Herd, B.Sc., *Plant Pathologist*: diseases of maize and potatoes
W. E. Kerr, B.Sc., B.Agr., *Officer-in-Charge, Seed Testing Laboratory and Seed Services*: certification; seed-borne diseases
A. Rothwell, B.Sc.Hons.Agr.Bot., M.I.Biol., *Plant Pathologist*: general plant diseases
H. Wild, Ph.D. (Lond.), A.R.C.S., D.I.C., *Senior Botanist*: taxonomy of African plants; weed control
J. O. Whiteside, Ph.D. (Lond.), *Plant Pathologist* (at Regional Plant Pathology Laboratory, P.O. Box 143, Umtali): diseases of deciduous fruits and legumes

LIST OF RESEARCH WORKERS, 1962

ADDENDUM

Please add the following to the list for the Federation of Rhodesia and Nyasaland at pages 364-374:—

AGRICULTURAL RESEARCH COUNCIL OF RHODESIA AND NYASALAND

Pax House, Union Avenue, Salisbury. Tel.: Salisbury 28131, 28132, 28133.
'Grams: Agresco, Salisbury

ADMINISTRATION

H. C. Pereira, B.Sc., Ph.D., D.Sc. (Lond.), *Director*
A. W. Lovatt, M.A. (St. And.), *Secretary*

BIOMETRICS

W. R. Mills, B.Sc. (Lond.), Dip.Agr.Sc. (Cantab.), D.T.A. (Trin.), *Senior Biometrician*
P. M. Burrows, B.Sc. (Manc.), *Biometrician*
N. H. Judge, B.Sc. (Nott.), *Assistant Biometrician*

HYDROLOGY

P. Wurzel, B.Sc. (Natal), *Ground-water Geologist*
P. R. B. Ward, B.Sc. (Lond.), *Physicist*: radioisotope tracing

GRAIN LEGUME PATHOLOGY RESEARCH TEAM

Chitedze Research Station, Lilongwe, Nyasaland
F. J. Nutman, O.B.E., D.Sc., D.I.C. (Lond.), *Team Leader*, *Plant Pathologist*
Miss F. M. Roberts, M.A., Ph.D. (Cantab.), *Plant Pathology* (*Virologist*)
R. W. Gibbons, B.Sc. (Dunelm), Dip.Agr.Sc. (Cantab.), D.T.A. (Trin.), *Plant Breeder*: *Ground nuts*
J. A. K. Farrell, B.Sc. (R'dg.), D.I.C. (Lond.), *Entomologist*: aphid studies
A. N. Adams, B.Sc. (Lond.), *Assistant Entomologist*

ANIMAL PRODUCTION RESEARCH TEAM

Mount Makulu Research Station, Lusaka, Northern Rhodesia
C. J. T. Rose, B.Sc. (Wits.), Ph.D., *Team Leader*: animal husbandry
S. H. W. Crnelik, B.Sc., Ph.D. (Zagreb), *Biochemist*: rumen functions
R. B. Symington, B.Sc. (Edin.), Ph.D. (Lond.), *Physiologist*: reproduction
W. R. Carr, A.R.I.C., *Biochemist*: blood serum and nutrition studies

SOIL PRODUCTIVITY RESEARCH TEAM

Grasslands Research Station, Marandellas, Southern Rhodesia
D. H. Saundar, B.Sc., M.Sc., Ph.D. (U.C.T.), *Team Leader*, *Soil Chemist*
Miss P. M. Grant, B.Sc. (Rhodes), Ph.D. (Lond.), D.I.C. (Lond.), *Soil Chemist*: greenhouse studies
S. T. Willatt, B.Sc. (W. Aust.), *Soil Physicist*
Miss O. M. Johnstone, B.Sc. (Rhodes), *Assistant Soil Microbiologist*

TSETSE BIOLOGY RESEARCH TEAM

University College, Salisbury, Southern Rhodesia
R. J. Phelps, B.Sc., M.Sc. (Natal), Ph.D. (Wis.), *Entomologist*
G. Davison, B.Sc. (Natal), *Experimental Officer*
Mrs. S. Savory, B.Sc. (Natal), *Assistant Entomologist*

FOREST TREE BREEDING RESEARCH TEAM

Kitwe, Northern Rhodesia
T. F. Geary, B.Sc. (Rhode Island), Ph.D. (Wis.), *Physiologist-pathologist*

FEDERATION OF RHODESIA AND NYASALAND

CHEMISTRY

- Tel.: Salisbury 29191. 'Grams: Agrichem
- H. Weinmann, Dr.Agr. (Munich), D.Sc. (Rand.), *Chief Agricultural Chemist*: plant nutrition; underground reserves of grasses
- R. G. Thomas, B.Sc., A.R.I.C., *Senior Agricultural Chemist*: pedology
- D. H. Saundier, M.Sc., Ph.D., *Senior Agricultural Chemist*: soil fertility
- D. G. Bushnell, M.Sc.Hons.Agr.Chem., *Agricultural Chemist, in charge Analytical Laboratory*: animal nutrition
- A. A. du Toit, M.Sc., *Pedologist*: land use surveys
- Miss P. M. Grant, B.Sc., Ph.D., D.I.C., *Research Chemist*: soil fertility
- L. Jacklitsch, Dr.Agr., *Pedologist* (seconded to Department of Conservation and Extension, N. Rhodesia): land use surveys
- L. Pearl, B.Sc., A.R.I.C., *Agricultural Chemist*: malting properties of native grains
- B. D. Soane, B.Sc., M.S., *Soil Physicist*: soil structure and water relationships
- J. G. Thompson, B.Sc., A.R.I.C., *Pedologist, in charge Soil Survey*: soil classification and land use surveys
- J. W. Thompson, B.Sc., Ph.D., *Spectrographer*: plant nutrition

ENTOMOLOGY

- Tel.: Salisbury 29191. 'Grams: Entomology
- J. A. Whellan, B.Sc., Dip.Ed., F.R.E.S., *Chief Entomologist*: general economic entomology; plant quarantine
- A. J. M. Carnegie, M.Sc., F.R.E.S., *Entomologist* (at Regional Entomology Laboratory, P.O. Box 143, Umtali): deciduous fruit insects
- J. A. K. Farrell, B.Sc.: stored products, insects
- G. C. Martin, *Senior Helminthologist*: nematode pests of crops
- D. J. W. Rose, B.Sc., A.R.C.S., F.R.E.S., *Senior Entomologist*: general economic entomology
- K. J. Wilson, B.Sc., Dip.Ed., *Entomologist*

GATOOMA RESEARCH STATION

- P.O. Box 396, Gatooma. Tel.: 2210. 'Grams: Gatag
(Headquarters of Cotton Pest Research Scheme—see under Nyasaland)
- A. H. McKinstry, D.I.C.T.A. (Trin.), *Officer-in-Charge*: cotton and general crops
- J. M. Burton, B.Sc.Agr. (Natal), *Agronomist*
- F. E. M. Gillham, B.Sc.Agr. (Stell.), *Plant Breeder*

GRASSLANDS RESEARCH STATION

- Private Bag, 701, Marandellas, S. Rhodesia. Tel.: 2527. 'Grams: Grasslands
- H. D. L. Corby, B.S.A. (Tor.), A.I.C.T.A. (Trin.), *Officer-in-Charge*: effects of grass leys on soil productivity: culture and nutrition of legumes, and legume bacteriology
- E. D. Alvord, M.Sc. (Pret.), *Senior Agronomist*: crops in rotation with dryland leys; maize, potatoes, groundnuts, soya beans
- D. L. Barnes, M.Sc. (Rand.), *Senior Pasture Research Officer*: dryland leys; natural veld; irrigated pastures
- D. P. Hanham, B.Sc. (Leeds), *Senior Animal Husbandry Officer*: nutrition of dairy cattle, beef cattle, and sheep on sand veld

MELSETTER PASTURE SUB-STATION

P.O. Melsetter. Tel.: 03222

- F. J. B. Atkinson, M.A. (Oxon.), *Pasture Research Officer*

FEDERATION OF RHODESIA AND NYASALAND

GWEBI AGRICULTURAL COLLEGE

Private Bag, 376 B, Salisbury. Tel.: 36735. 'Grams: Gwebicol
W. L. Fielding, Ph.D., M.Sc.Agr. (Lond.), Dip.Agr. (Cantab.), Dip.Agr. (Wye), *Principal*
W. J. Ascough, B.Sc.Agr. (R'dg.), *Lecturer*: field engineering, including farm planning
G. C. Bate, B.Sc.Agr. (Natal), *Lecturer*: pasture management and soil science; pasture research
R. H. K. Hill, M.A. (Cantab.), *Senior Lecturer*: field husbandry; farm management; botany; time and motion studies
G. L. Lloyd, B.Sc.Agr. (Natal), *Lecturer*: poultry breeding and feeding investigations; genetics
H. R. Mundy, M.A. (Oxon.), B.Sc. (Rhodes), M.I.Biol., *Senior Lecturer*: animal husbandry; feeding and breeding investigations
H. A. Templeton, B.Sc.Agr.Eng. (Sask.), Dip.Agr. (Macdonald), N.Dip.-Agr.Eng., M.I.A.E., M.A.S.A.E., *Senior Lecturer*: agricultural engineering, machinery testing and modification of machines

CHIBERO AGRICULTURAL COLLEGE

Private Bag, 901, Norton, S. Rhodesia. Tel.: 73126
J. W. Walsh, B.Agr. (Belf.): *Principal*

HENDERSON RESEARCH STATION

Private Bag, 4, Marzoe. Tel.: 11. 'Grams: Agrizoe
J. W. Rowland, Dr.Sc.Agr. (Pret.), *Officer-in-Charge*: pasture and land use
K. B. Addison, B.Sc. Soil Cons. (Rand.), *Senior Pasture Research Officer*: pastures
R. C. Elliott, B.Sc.Agr. (Pret.), *Senior Animal Husbandry Officer*: beef cattle nutrition
P. E. L. Thomas, B.Sc.Agr. (Pret.), *Senior Agronomist*: crops and irrigation
M. I. van der Lingen, B.Sc.Hons. (Natal), *Chief Fisheries Officer*: fish culture and hydrobiology

MATOPOS RESEARCH STATION

Private Bag, 19 K, Bulawayo. Tel.: Matopos 2. 'Grams: Matagric, Bulawayo
J. M. Rattray, M.Sc., *Research Officer-in-Charge*: ecology of vegetation, particularly grasses
T. C. D. Kennan, B.Sc.Agr., *Senior Pasture Research Officer*: grazing management of natural vegetation; planted pastures
P. A. Donovan, B.Sc. (St. And.), Dip.Agr. (Cantab.), A.M.I.B.A.E., *Senior Agronomist*: crop ecology; sorghum growing
G. P. van Niekerk, Dip.Agr., *Poultry Officer*: feeding and housing trials
T. H. Vorster, M.Sc.Agr., *Senior Animal Husbandry Officer*: animal breeding; beef production studies

PASTURE SUB-STATION

P.O. Box 19, Nyamandhlovu. Tel.: 0-1903
R. P. Denny, B.Sc.Agr., *Pasture Research Officer*: grazing management; ecological studies

SABI VALLEY EXPERIMENT STATION

Private Bag, 395c, Umtali. Tel.: Chippinga 0-3640. 'Grams: Sabex, Umtali
W. H. Williams, M.A., B.Sc. (Aberd.), D.I.C., *Officer-in-Charge*: chemistry of irrigated soils

FEDERATION OF RHODESIA AND NYASALAND

K. E. Cackett, B.Sc.Agr. (Natal), *Senior Agronomist*: agronomy of irrigated crops; soil/water relationship studies

H. R. R. Metelerkamp, B.Sc.Agr. (Natal), *Soil Physicist*: water requirements and effects of water and crops on soil physical conditions

DECIDUOUS FRUIT RESEARCH STATION, INYANGA

Private Bag, Rusape. Tel.: Juliasdale 0-1202

C. B. Payne, B.Sc., *Horticulturist*

Federal Department of Conservation and Extension

P.O. Box 8117, Causeway, Salisbury. Tel.: Salisbury 28887-8 9. 'Grams: Conex, Salisbury

HEADQUARTERS

J. J. Duvenage, M.Sc.Agr., *Director*

C. K. Thompson, B.Sc.Hons.Agr.Chem., A.R.I.C., *Deputy Director*

J. M. Cormack, B.Sc.Eng., *Chief Conservation Engineer*: conservation engineering

H. R. Hack, *Senior Planning Officer*: farm planning advisory service

N. W. Hudson, B.Sc.Eng., *Senior Research Engineer*: erosion experiments; erosion control

D. C. Jackson, B.Sc.Agr.Chem., *Research Officer*: fertility erosion

A. N. Pirie, B.Sc.Eng., *Buildings Advisory Engineer*: building construction advisory service

L. A. N. Robertson, B.Sc.Eng., *Research Engineer*: land drainage

G. Turck, B.Sc.Cons., *Senior Irrigation Officer*: irrigation advisory service

V. Vincent, Ph.D., *Chief Planning and Training Officer*: farm planning advisory service

NORTHERN RHODESIA

P.O. Box 563, Lusaka. Tel.: 82724. 'Grams: Conex

R. S. H. Fitt, *Regional Director*

A. N. Beaumont, B.Sc.Cnns., *Regional Conservation and Extension Officer*: agriculture advisory service

Department of Veterinary Services

At P.O. Box 8012, Causeway, Salisbury. Tel.: Salisbury 22558 and 23090.

'Grams: Vaccine, Salisbury

J. MacKinnon, M.R.C.V.S., *Director of Veterinary Services*

T. Lees May, D.A.P. & E. (Lond.), M.R.C.V.S., *Assistant Director of Veterinary Services (Field)*

VETERINARY RESEARCH LABORATORY

At P.O. Box 8101, Causeway, Salisbury. Tel.: 24669/24652. 'Grams: Vaccine

G. J. Christie, B.Sc., M.R.C.V.S., D.V.S.M., *Assistant Director of Veterinary Services (Research)*: bovine infertility

J. B. Condy, M.R.C.V.S., D.T.V.M., *Veterinary Research Officer*: parasitology

J. R. Philip, B.V.Sc., *Veterinary Research Officer*: bacteriology and poultry pathology

R. M. Roberts, M.R.C.V.S., *Veterinary Research Officer*: infertility and artificial insemination

D. K. Shone, B.V.Sc., *Chief Veterinary Research Officer*: virology and toxicology

TSETSE AND TRYpanosomiasis CONTROL BRANCH

At P.O. Box 8100, Causeway, Salisbury. Tel.: 29191. 'Grams: Tsetse

J. Ford, M.A., B.Sc., *Assistant Director of Veterinary Services (Tsetse and Trypanosomiasis Control)*

FEDERATION OF RHODESIA AND NYASALAND

- W. P. Boyt, B.V.Sc., M.R.C.V.S., *Chief Veterinary Officer (Trypanosomiasis)*: epidemiology and therapeutics of cattle trypanosomiasis
G. F. Cockhill, B.Sc., Ph.D., *Chief Entomologist (Tsetse)*: application of persistent insecticides in tsetse-fly control; use of arboricides in control of tsetse-fly cicarings
Miss B. M. Leggate, B.Sc., *Entomologist*: behaviour of *Glossina* in relation to feeding habits and game incidence; the effect of these factors on trypanosome infections in tsetse-fly populations
D. F. Lovemore, M.Sc., *Entomologist*: ecology of *Glossina*
R. D. Pilson, B.Sc., *Survey Ecologist*: seasonal behaviour of *Glossina* related to incidence of animal trypanosomiasis; application of control measures in relation to agricultural development

MINISTRY OF TRANSPORT AND WORKS

Meteorological Department

P.O. Box 8066, Causeway, Salisbury. Tel.: Salisbury 21055. 'Grams: Met, Salisbury

- J. S. Peake, B.Sc., *Director*
W. V. Lacey, B.Sc.Agr.: agricultural meteorology
Miss S. Lineham, M.A.: rainfall studies
J. D. Torrance, B.Sc.: climate and advisory services

TOBACCO RESEARCH BOARD OF RHODESIA AND NYASALAND

P.O. Box 1909, Salisbury. Tel.: Salisbury 50411. 'Grams: Tobres, Salisbury
I. McDonald, B.Sc. (S.A.), M.A. (Oxon.), Ph.D. (N.C.), A.R.I.C., *Director*

Tobacco Research Station, Kutsaga

P.O. Box 1909, Salisbury. Tel.: 50411

AGRICULTURAL ENGINEERING

J. A. F. Roberts, B.S.A.Mech.Eng. (Tor.), N.D.A., A.M.A.S.A.E., A.M.I.A.E., *Agricultural Engineer*: agricultural engineering

AGRONOMY

R. C. Salmon, B.Sc. (Cape T.), M.A. (Oxon.), A.R.I.C., *Officer-in-Charge*: cultural practices and fertilizers
R. J. Haslam, B.Sc. (Rhodes), *Agronomist*: rotations
R. M. Osborne, B.Sc.Agr. (Natal), *Agronomist*: cultural practices; fertilizers and rotation
E. M. Paterson-Jones, B.Sc.Agr. (Natal), *Agronomist*: cultural practices
H. Rostron, B.Sc.Agr. (Leeds), Dip.Agr. (Cantab.), D.T.A. (Trin.), *Agronomist*: cultural practices and fertilizers

CHEMISTRY

G. H. Wiltshire, M.A., Ph.D. (Cantab.), *Senior Chemist*: tobacco chemistry
Miss A. C. Palmer, B.Sc. (Cape T.), Dip.Ed. (Oxon.), *Chemist*: tobacco chemistry
W. W. Ryding, B.Sc. (S.A.), M.Sc. (Rhodes), A.R.I.C., *Chemist*: tobacco and soil chemistry
E. R. Tillett, B.Sc.Agr. (Natal), *Chemist*: soil chemistry

ENTOMOLOGY

J. B. B. Legge, B.Sc. (Dunelm), *Senior Entomologist*: insect pests of tobacco and their control

FEDERATION OF RHODESIA AND NYASALAND

NEMATOLOGY

- R. A. C. Daulton, M.Agr. (Belf.), Ph.D. (N.C.), *Senior Nematologist*: control of rootknot and ecto-parasitic nematodes of tobacco
Miss J. V. Farmer, B.Sc. (Lond.), M.Sc. (W. Ont.), D.I.C., *Nematologist*: host/parasite relationship of ecto-parasitic nematodes of tobacco
J. A. Shepherd, M.A., Dip.Agr. (Cantab.), D.I.C., *Nematologist*: host/parasite relationship of ecto-parasitic nematodes of tobacco

PLANT BREEDING

- J. G. Raeber, Ing.Agr. (Zur.), M.S., Ph.D. (Iowa), *Senior Plant Breeder*: tobacco breeding and genetics
M. A. Schweppenhauser, M.Sc. (Stell.), *Plant Breeder*: tobacco breeding and genetics

PLANT PATHOLOGY

- J. S. Cole, B.Sc. (Wales), Ph.D. (Lond.), D.I.C., *Senior Plant Pathologist*: tobacco diseases in relation to microclimate
L. F. Gates, B.A. (Cantab.), *Plant Pathologist*: virus diseases of tobacco
W. F. T. Hartill, Ph.D. (Soton.), *Plant Pathologist*: soil-borne tobacco diseases

STATISTICS

- Mrs. I. Gill, M.Phil.Hons.Math. (Krakow), *Senior Biometristian*: experimental design and survey
G. P. Y. Clarke, B.Sc.Agr. (Natal), *Biometristian*: experimental design and survey

Tobacco Research Station, Trelawney

P.O. Trelawny. Tel.: 01523

- J. S. W. Ingham, B.Sc.Agr. (Natal), *Agronomist-in-Charge*: cultural practices, and fertilizers
L. T. V. Cousins, B.Sc.Agr. (Natal), *Agronomist*: agronomy, Turkish and Burley tobaccos

Northern Rhodesia: Tobacco Research Station, Broken Hill

P.O. Box 908, Broken Hill, N.R. Tel.: 0833

- H. D. Papenfus, B.Sc.Agr. (Natal), *Agronomist-in-Charge*: cultural practices and growth

Pig Industry Board of Southern and Northern Rhodesia

- At P.O. Box 8537, Causeway, Salisbury
Tel.: 20642, 'Grams: Pigboard
A. Calder, O.B.E., Ph.D., F.R.S.E., N.D.A., *Director of Pig Industry Development*: pig breeding and feeding

UNIVERSITY COLLEGE OF RHODESIA AND NYASALAND

Private Bag 167 H, Salisbury. Tel.: Salisbury 35105, 35114. (Library:
Scientific Int. Serv. only—35383). 'Grams: Unicoll, Salisbury

Department of Agriculture

- A. G. Davis, B.S.A. (Tor.), M.Sc. (Wales), *Professor of Agriculture*: agronomy
J. C. S. Allison, M.Sc.Agr. (Pret.), *Lecturer*: agricultural engineering and farm mechanization

FEDERATION OF RHODESIA AND NYASALAND

- R. W. M. Johnson, B.Agr.Sc., M.Agr.Sc. (N.Z.), *Lecturer*: agricultural economics
W. Lloyd Jenkins, M.Sc., Ph.D. (Wales), A.R.I.C., *Lecturer*: agricultural chemistry
P. W. Mueller, B.Sc. (R'dg.), *Research Fellow*
J. Oliver, B.Sc. (Dunelm), Ph.D. (R'dg.), *Senior Lecturer*: animal husbandry; dairy husbandry
A. R. Quartermain, B.Sc.Agr., M.Sc.Agr. (N.Z.), *Assistant Lecturer*: animal husbandry
J. H. Topps, B.Sc., Ph.D. (Lond.), *Lecturer*: animal nutrition
J. P. Watson, B.A.Agr., M.A., B.Sc. (Oxon.), *Lecturer*: pedology and soil science

Department of Botany

- A. S. Boughey, B.Sc. (Lond.), Ph.D. (Edin.), *Professor of Botany*: African ecology in general and bush encroachment
Miss B. Douglas, B.Sc., Ph.D. (Lndn.), *Lecturer*
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Miss J. J. Rankin, B.Sc., Ph.D. (Edin.), *Senior Lecturer*: lymphatic systems of primates
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(Lond.), *Adviser on Animal Health*

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Administered by the Department of Scientific and Industrial Research.

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Porton Down, near Salisbury, Wilts. Tel.: Idmiston 211

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F. Barlow, B.Sc., *Principal Scientific Officer, Chemist*: chemical and physical properties of pesticides

R. F. Hill, A.F.R.Ae.S., *Engineer*: design of equipment for application of pesticides, with particular reference to aircraft

D. R. Johnstone, B.Sc., Grad. Inst. P., *Experimental Officer, Physicist*: physical problems related to pesticide applications

P. T. Walker, B.Sc., M.Sc., *Senior Scientific Officer, Entomologist*: factors involved in control of agricultural pests

ANTI-LOCUST RESEARCH CENTRE

HEADQUARTERS: 1, Princes Gate, Kensington, London, S.W.7

Tel.: Kensington 7060. 'Grams: Antilocust

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Miss E. Betts, B.A.: cartographic study of swarm movements

Miss J. I. Magor, M.A.: climatic characteristics of Desert Locust breeding areas

GEOGRAPHICAL SECTION

Miss Z. V. Waloff, O.B.E., M.Sc., *Head of Section*: locust biogeography and bioclimatics

K. G. Wardhaugh, B.Sc.: geographical variation in rates of development of locust eggs and larvae

DEPENDENT TERRITORIES

INSECTICIDE SECTION

R. D. MacCuaig, M.Sc., *Head of Section*: biological and physical aspects of locust control

LABORATORY

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Miss P. E. Ellis, Ph.D.: locust behaviour

P. Hunter-Jones, M.Sc.: supervision of locust breeding; locust and grasshopper life-cycles and mortality factors

Mrs. M. J. Richards, Ph.D.: sexual maturation and oviposition

D. E. Davies, B.Sc., *Statistician*

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(These pools have been formed under Schemes financed entirely from Colonial Development and Welfare Research funds. The primary object of the Schemes is to enable entomologists, plant pathologists, stored products specialists, pesticides chemists and soil scientists to be available to undertake essential investigations in Commonwealth countries, both dependent and independent, lacking the necessary qualified staff. The entomologists and plant pathologists are based on the Commonwealth Institute of Entomology and the Commonwealth Mycological Institute respectively, and the stored products specialists and pesticides chemists based on the Pest Infestation Laboratory and the Tropical Products Institute respectively. The soil scientists' headquarters is at Rothamsted Experimental Station where they work between tours abroad.)

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Z. Horn, M.B.E., *Deputy Agricultural Adviser*: organization and supervision of research work

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Vacant: *Senior Agricultural Officer*: selection of tropical fruits; varietal testing of vegetables

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N. L. Davies, B.Sc. (Wales), *Sugar Agronomist*: breeding and selection of sugar-cane varieties
R. Hewson, B.Sc. (Nott.), D.T.A., *Agronomist, St. Ignatius Livestock Station*: livestock and pasture research
H. V. S. Ho-a-Shu, D.I.C.T.A., A.I.C.T.A., *Agricultural Officer (Perennial Crops)*: coconuts; cacao; citrus
Vacant: *Assistant Director of Agriculture (Research)*

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S. P. Legg, M.C., B.Sc., M.A., *Research Officer*, Enini Livestock Station, Berbice River: livestock and pasture research
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M. A. Foale, B.Agr.Sc., D.T.A.: general coconut agronomy
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P. J. M. Greenslade, B.A., Ph.D.: control of *Amblypelta cocophaga*

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G. L. Lucas, B.Sc., F.L.S., *Botanist*: systematic botany (E. A. Herbarium, Box 5166, Nairobi)
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Miss F. M. L. Sheffield, D.Sc., *Plant Pathologist*: virus diseases, plant quarantine
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J. M. B. Harley, B.Sc.: ecology of *Glossina* and of their host mammals with reference especially to cattle trypanosomiasis
K. van Hocve, Med. Vet. Drs.: veterinary trypanosomiasis
R. H. Knight, B.Sc., Ph.D.: biochemistry
D. H. H. Robertson, M.B., Ch.B., M.R.C.P., D.T.M. & H.: human trypanosomiasis
H. A. W. Southon, M.A.: ecology of human trypanosomiasis
Miss W. A. F. Webber, B.Sc., Ph.D.: protozoology.

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P. R. Chadwick, M.A. (Cantab.), D.I.C., *Senior Scientific Officer, Entomologist*: entomological problems in control of tsetse flies with insecticides
N. O. Crossland, B.Sc., *Scientific Officer, Malacologist*: application of pesticides to control of bilharzia
R. Foster, B.Sc., Ph.D. (Dunelm), *Senior Scientific Officer, Parasitologist*: problems in the control of bilharzia
D. H. Green, B.Sc., *Scientific Officer, Botanist*: uses of herbicides in the tropics
S. D. Hocomhe, B.Sc., *Scientific Officer, Botanist*: uses of herbicides in the tropics
C. W. Lee, B.Sc., *Assistant Physicist*: physical problems of spraying in the tropics
R. H. Parish, B.Sc., *Senior Scientific Officer, Entomologist*: entomological problems in the application of pesticides in tropical agriculture
P. O. Park, B.Sc., A.R.I.C., *Senior Scientific Officer, Chemist*: chemical problems in application of pesticides in the tropics
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A. Smith, B.Sc., Ph.D., *Senior Scientific Officer, Entomologist*: problems in the control of mosquitoes with insecticides
D. J. Webley, B.Sc., Ph.D., A.R.I.C., *Senior Scientific Officer, Chemist*: chemical problems in the application of pesticides in the tropics
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P. Moss, B.Sc., M.Sc., A.R.I.C., *Soil Chemist in charge of routine soil and plant analysis*: soil solution in relation to the ratio law; effect of soil moisture tension on ion uptake by plants; potassium and phosphorus fertility of West Indian soils
D. B. Murray, M.A., A.I.C.T.A., *Senior Plant Physiologist*: physiological investigations on cocoa
R. Nichols, M.Sc., *Plant Physiologist*: investigations of cherelle wilt and growth substances of cocoa
V. C. J. Quesnel, M.A., Ph.D., *Biochemist*: biochemistry of cacao fermentation: plant phenolics
G. W. R. Smith, M.Sc., A.Inst.P., *Physicist*: agricultural meteorology and soil physics; differential thermal and X-ray analysis
J. Spector, B.Sc., Special, A.Inst.P., F.S.S., *Spectrochemist*: trace elements in soils, rocks, animals, plants and related biological materials
J. Stark, B.Sc., *Soil Surveyor*: in charge of Soil Survey in Jamaica
I. T. Twyford, B.Sc., A.R.I.C., *Agronomist-Soil Surveyor*: productivity of soils under bananas and other crops
K. C. Vernon, B.Sc., A.I.C.T.A., F.G.S., *Senior Soil Surveyor*: soil survey with special emphasis on land capability and land use
D. Walmsley, M.Sc., Ph.D., *Soil Chemist*: radioisotope tracer studies in plants and soil

RUBBER RESEARCH UNIT

- C. F. Arlett, B.Sc., Ph.D.: on secondment from the Rubber Research Institute of Malaya: host/parasite relationship between *Hevea* rubber and *Dothidella ulci*

SEISMIC RESEARCH UNIT

- K. G. Barr, B.Sc., *Seismologist*
G. R. Robson, B.Sc., Ph.D., F.G.S., *Seismologist*: volcanology and seismology

WINDWARD ISLANDS DOMINICA

Roseau, Dominica

- Vacant: *Commissioner for Agricultural Development*
R. B. Blatcher, M.R.C.V.S., *Veterinary Officer*

DEPENDENT TERRITORIES

GRENADA

W. A. Southwall, *Acting Superintendent of Agriculture*
E. C. Arthur, B.Sc., D.V.M., *Veterinary Officer*
D. A. Perryman, M.B.E., D.I.C.T.A., *Cocoa Agronomist: research into the agronomy of cocoa and the vegetative propagation of nutmegs*

ST. LUCIA

C. M. E. Cadet, M.Sc.Agr., *Acting Agricultural Superintendent*
D. G. Louisy, D.V.M., D.T.V.M., *Veterinary Officer*

ST. VINCENT

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I. A. E. Kirby, D.V.M., D.T.V.M., D.I.C.T.A., *Veterinary Officer*
C. J. Williams, D.I.C.T.A., *Agricultural Officer (Research)*

ZANZIBAR

DEPARTMENT OF AGRICULTURE

'Grams: Agricola, Zanzibar
M. F. H. Selby, M.A. (Cantab.), Dip.Agr. (Cantab.), A.I.C.T.A., *Director: general policy*
R. K. Tremlett, B.Sc. (Lond.), A.R.C.S., A.I.C.T.A., *Assistant Director of Agriculture*
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B. Buckler, B.Sc.Agr. (R'dg.), D.T.A. (Trin.)
Said Hamed Mauly, Dip.Agr. (Makerere), B.Sc. (R'dg.)
K. A. Bowden, N.D.A., M.R.A.C.
B. G. C. Smith, B.Sc.Agr. (R'dg.), D.T.A. (Trin.)
A. Rashid, M.R.C.V.S. (Edin.), D.T.V.M., *Veterinary Officer*
K. H. Bryant, B.Sc.For. (Edin.), *Forest Officer*

EMPIRE COTTON GROWING CORPORATION

London Office

12 Chantrey House, Eccleston Street, London, S.W.1

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D. F. Ruston, B.Sc., N.D.A., Dip.Agr., A.I.C.T.A., *Director*

M. H. White, M.A., *Secretary*

H. E. King, O.B.E., B.Sc., Dip.Agr., *Editor*

East Africa

COTTON RESEARCH STATION, NAMULONG, P.O. Box 884, Kampala, Uganda
Tel.: Kasangati 3. *Grams: Cotrest Kampala

J. M. Munro, B.Sc., *Director*

M. H. Arnold, M.A.: cotton breeding

J. T. Walker, B.Sc., A.K.C.: cotton breeding

D. A. Morris, B.Sc.: cotton breeding

D. E. B. Kibukamusoke, Dip.Agr.: experimental statistics

H. G. Farbrother, B.Sc.: plant physiology

D. A. Rijks, M.Sc.: plant physiology

Mrs. Kathleen M. Arnold, M.A., Ph.D.: plant pathology

G. O. Stride, B.Sc., Ph.D.: entomology

P. H. Le Mare, B.Sc.: soil science

J. E. A. Ogborn, A.R.I.C.: soil science

E. Jones, M.Sc.: soil science

D. L. Hobbs, *Secretary*

R. G. Passmore, N.D.A., *Farm Manager*

SERERE, Soroti, Uganda

A. Low, B.Sc.: cotton breeding

KIBOS, Nyanza Province, Kenya

M. S. Hastie, B.Sc.: cotton breeding

UKIRIGURU, Mwanza, Lake Province, Tanganyika

G. M. Wickens, B.Sc., Ph.D., D.I.C., M.I.Biol.: plant pathology

K. J. Brown, B.Sc.: cotton breeding

J. E. Cross, B.Sc., M.S.: cotton breeding

W. Reed, B.Sc.: entomology

A. M. Kabaara, M.Sc.: soil science

ILONGA, Kilosa, Eastern Province, Tanganyika

R. Smith, B.Sc.: cotton breeding

T. Bradley, B.Sc.: cotton breeding

Nyasaland

MAKANGA, Chiromo, Southern Province

*D. F. Collings, C.D.A.: cotton breeding

Northern Nigeria

SAMARU, Zaria Province

M. A. Choyce, B.Sc., D.I.C.: entomology

D. A. Lawes, B.Sc.: cotton breeding and physiology

B. E. Costelloe, B.Sc.: cotton breeding

J. L. Palmer, B.Sc.: cotton breeding

G. B. Jones, B.Sc.: cotton breeding

D. J. de B. Lyon, B.Sc.: entomology

M. Dransfield, B.Sc., Ph.D.: plant pathology

* Seconded from Department of Agriculture

EMPIRE COTTON GROWING CORPORATION

Western Nigeria

IBADAN

B. J. S. Lee, B.Sc.: cotton breeding and agronomy
J. A. Hayward, B.Sc.: entomology

Republic of the Sudan

WAD MEDANI, Gezira

L. C. Hughes, B.Sc.: cotton breeding
P. D. Walton, M.Sc.: cotton breeding
R. C. Faulkner, B.Sc.: cotton breeding
J. H. Proctor, B.Sc., D.T.A.: entomology
L. A. Mound, B.Sc., D.I.C., D.T.A.: entomology
D. E. Evans, B.Sc., D.I.C.: entomology

SHAMBAT, Khartoum North

J. H. Saunders, B.Sc.: cotton genetics
N. L. Innes, B.Sc.: cotton genetics
R. E. Gunn, B.Sc.: cotton genetics

Aden

EL KOD

A. B. Hearn, B.Sc., Dip.Agr., D.T.A.: cotton breeding and agronomy
J. H. Brettell, B.Sc.: entomology

West Indies

ST. JOHN's, Antigua

J. R. Spencer, A.I.C.T.A., D.I.C.T.A., *Cotton Officer, West Indies*

Thailand

SRISAMRONG

K. R. M. Anthony, B.Sc., A.I.C.T.A.: cotton breeding

THE BRITISH MIDDLE EAST DEVELOPMENT DIVISION

c/o The British Embassy, Beirut

The Development Division includes a number of specialist officers whose services in their respective spheres are available in a consultative and advisory capacity to the government of any Middle East country which may desire to avail of them.

P. P. Howell, O.B.E., D.Ph., *Counsellor, Head of Development Division*

R. S. Porter, O.B.E., M.A. (Oxon.), B.Litt., *Statistical Adviser and Economist*

J. C. Eyre, C.B.E., B.Sc.Agr., D.I.C., *Agricultural Adviser*

P. Durran, M.R.C.V.S., *Animal Husbandry Adviser*

R. W. T. Griffith, *Industrial Adviser*

D. F. Davidson, O.B.E., B.Sc.For. (Aberd.), *Forestry and Soil Conservation Adviser*

J. M. Ross, O.B.E., *Co-operative Adviser*

REPUBLIC OF IRELAND

A. DEPARTMENT OF AGRICULTURE

Government Buildings, Dublin 2. Tel.: Dublin 61521. 'Grams: Resources

- J. Beatty, B.Sc., A.R.C.Sc.I., *Chief Inspector*
J. J. Brady, M.Agr.Sc., *Deputy Chief Inspector*; plant breeding
P. Harnett, M.R.C.V.S., *Director of Veterinary Services*
G. Cussen, M.Agr.Sc.: certification (cereals)
C. Devlin, B.Agr.Sc.: plant breeding
J. P. Dunne, B.Agr.Sc.: seed propagation (roots and fodder plants)
E. P. Harrington, B.Agr.Sc.: seed propagation (cereals)
J. F. Mullin, M.Agr.Sc.: seed testing; economic botany
P. O'Leary, B.Agr.Sc.: biometrics
T. O'Sullivan, B.Agr.Sc.: seed propagation; certification (herbage)
J. Purcell, B.Agr.Sc., M.Sc.: plant breeding

1. Veterinary Research Laboratory

Abbotstown Farm, Castleknock, Co. Dublin. Tel.: Dublin 343041

- J. F. Timoney, M.R.C.V.S., *Director*
B. Adams, M.R.C.V.S.: poultry diseases
J. J. Collins, M.R.C.V.S.: general pathology and bacteriology
Mrs. K. Lowndes, M.R.C.V.S.: poultry pathology
B. MacClancy, M.R.C.V.S.: bovine infertility
T. Murphy, M.R.C.V.S., M.Sc.: calf diseases
E. O'Byrne, M.R.C.V.S.: bovine infertility
P. J. Smyth, M.R.C.V.S.: biochemistry (nutritional diseases and toxicology)
H. Thornberry, M.R.C.V.S.: parasitology, including bee diseases

2. Butter Testing Station

Harcourt Terrace, Dublin 2. Tel.: Dublin 62453

- Miss B. M. Cotter, M.Sc., F.I.C.I., *Chief Technical Officer*
Miss C. Fant, B.Sc., *Chemist*
Mr. P. Dowling, B.Sc. Dairying, *Bacteriologist*

3. Cereal Station

Ballinacurra, Co. Cork. Tel.: Midleton 63257

- T. J. R. O'Sullivan, B.Agr.Sc.: plant breeding
P. Berry, M.Agr.Sc.: pathology
B. Gormley, B.Agr.Sc.: plant breeding

4. Munster Institute

Cork. Tel.: Cork 41045

P. D. Curran, B.Agr.Sc., *Superintendent*

5. Agricultural School

Athenry, Co. Galway. Tel.: Athenry 2

- J. F. Ward, B.Agr.Sc., *Superintendent*
E. K. Twomey, B.Agr.Sc.: plant breeding

6. Agricultural School

Ballyhaise, Co. Cavan. Tel.: Ballyhaise 8

- T. A. Aylmer, B.Agr.Sc., *Superintendent*
J. K. O'Donohoe, B.Agr.Sc.: plant breeding

REPUBLIC OF IRELAND

7. Agricultural School

Clonakilty, Co. Cork. Tel.: Clonakilty 120
C. Gannon, M.Agr.Sc., Ph.D., *Superintendent*
M. Begley, B.Agr.Sc.: plant breeding

B. DEPARTMENT OF LANDS

Forestry Division, 22 Upper Merrion St., Dublin 2. Tel.: 65821. Grams:
Inforesta .
S. M. O'Sullivan, B.Agr.Sc., *Inspector General*
O. V. Mooney, B.Agr.Sc., *Chief Research Officer*
R. N. O'Carroll, M.Agr.Sc.: silviculture
J. O'Driscoll, B.Agr.Sc.: silviculture
N. Morris, B.Agr.Sc.: forest inventory; mensuration; working plans
L. P. O'Flanagan, B.Agr.Sc.: forest inventory; mensuration; working plans
A. M. S. Hanan, Agr.For.B.: volume tables; yield tables
P. M. Joyce, B.Agr.Sc.: thinning research

C. AN FORAS TALÚNTAIS

(The Agricultural Institute)

33 Merrion Road, Ballsbridge, Dublin 4. Tel.: Dublin 693222. Grams:
Agres

The functions of the Institute are to review, facilitate, assist, co-ordinate, promote and undertake agricultural research.
Correspondence addressed to any Station or Department of An Foras Talúntais should include the words "An Foras Talúntais" or "Agricultural Institute" in the address.

Headquarters

T. Walsh, M.Agr.Sc., Ph.D., D.Sc., *Director*
D. Murphy, B.Sc., M.Sc., Ph.D., *Scientific Aide, Editor*, "Irish Journal of Agricultural Research"
J. J. Kilroy, B.Agr.Sc., *Scientific Aide*
B. M. Lewis, B.Agr.Sc., *Agricultural Aide*
P. V. Geoghegan, B.Agr.Sc., *Assistant to the Agricultural Aide*

DEPARTMENT OF STATISTICS

Sandymount Avenue, Ballsbridge, Dublin 4. Tel. 684791.

F. M. O'Carroll, B.Sc., A.I.S., *Head*: design, analysis and interpretation of field experiments; surveys
D. Harrington, B.Sc.

1. Animal Production Division

Headquarters: Dunsinea, Castleknock, Co. Dublin. Tel.: Dublin 343276
L. B. O'Moore, M.Sc., Ph.D., M.R.C.V.S., M.R.I.A., *Chief of Division*

(a) ANIMAL BREEDING AND GENETICS DEPARTMENT

V. E. Vial, M.Agr.Sc., *Head*: performance and progeny testing (beef cattle); flock recording (sheep)
G. P. More O'Ferrall, B.Agr.Sc.: genetic studies on small animals

(b) ANIMAL PHYSIOLOGY DEPARTMENT

J. P. Crowley, B.Agr.Sc., M.V.B., M.R.C.V.S., *Head*: reproductive physiology in cattle and sheep
Z. S. Dabzewski, D.Sc.Agr.: blood typing

REPUBLIC OF IRELAND

- (c) FIELD INVESTIGATIONS DEPARTMENT
D. B. R. Poole, M.R.C.V.S.: stock disorders; control of copper deficiency

(d) GRASSLAND MANAGEMENT AND CONSERVATION

- A. Conway, B.Agr.Sc., *Head*: grass crop utilization
N. V. Downey, M.R.C.V.S.: parasitic infestations in cattle at pasture
*P. Drennan, B.Agr.Sc.: silage
E. Keanie, B.Agr.Sc.: grassland management
R. McCarrick, B.Agr.Sc., M.Sc.: silage research
T. Nolan, B.Agr.Sc.: pasture management

(e) LIVESTOCK HUSBANDRY DEPARTMENT

- S. Curran, M.Agr.Sc., *Head*: animal husbandry research
Miss P. McGloughlin, B.S.Agr. (Georgia)
†J. Tobin, B.Agr.Sc.

(f) ANIMAL NUTRITION AND BIOCHEMISTRY DEPARTMENT

- Temporary address: Thorndale, Beaumont Road, Whitehall, Dublin 9. Tel.: 79465
M. F. Maguire, M.Sc., Ph.D., Dip.Agr.Sc., *Head*
J. F. Connolly, M.Sc.: mineral requirements of livestock
Miss U. Cotter, B.Sc.: biological value of proteins
M. J. Lawlor, M.Agr.Sc., Ph.D.: ruminant nutrition; nitrogen metabolism
Miss A. O'Briain, M.Sc., A.R.I.C.: vitamin requirements of non-ruminants
J. O'Shea, M.Sc.: chemical aspects of energy requirements
‡R. K. Wilson, B.Sc., Ph.D., A.R.I.C.: ruminant energy metabolism

(g) MEAT RESEARCH DEPARTMENT

- Temporary address: Thorndale, Beaumont Road, Dublin 9. Tel.: Dublin 79465
M. A. Carroll, B.Sc., *Head*: quantitative carcass evaluation
F. Hill, B.Sc., M.S., A.R.I.C.: biochemistry of meat toughness; xanthophyll in sheep fat
J. V. McLoughlin, B.Sc., M.Sc., Ph.D., A.R.I.C.: factors affecting biochemical postmortem changes in pig and relation to meat quality

Animal Production Research Centre

- Grange, Dunsany, Co. Meath. Tel.: Dunsany 4
F. J. Harte, M.Agr.Sc., *Station Manager*: calf rearing

Dairying Research Centre

- Moorepark, Fermoy, Co. Cork. Tel.: Fermoy 183
M. Walshe, B.Agr.Sc., *Station Manager*
D. Kelleher, B.Agr.Sc., *Acting Station Manager*

(h) DAIRY BACTERIOLOGY DEPARTMENT

- M. J. Mulcahy, M.Sc.: survey of milk quality; viable counts, sporeformers, starter inhibitors, pathogens

(i) DAIRY CHEMISTRY DEPARTMENT

- T. C. A. McGann, M.Sc., Ph.D.: survey of milk quality; fat, S.N.F., protein, ions
Miss K. Gardiner, M.Sc.: dairy chemistry research

*Working in the Faculty of Dairy Science, University College, Cork.

†Stationed at Rath Co-operative Enterprises, Ltd., Tullow, Carlow.

‡Stationed at Divisional headquarters.

REPUBLIC OF IRELAND

- (j) LIVESTOCK HUSBANDRY DEPARTMENT
M. J. Cowhig, B.Agr.Sc.: dairy husbandry
P. Gleeson, B.Agr.Sc.: dairy husbandry survey
J. F. O'Grady, B.Agr.Sc., M.Sc.: pig husbandry
- (k) ANIMAL PHYSIOLOGY DEPARTMENT
J. F. Nyhan, M.V.B., M.R.C.V.S.: reproductive physiology in cattle and pigs
- (l) GRASSLAND NUTRITION AND ECOLOGY DEPARTMENT (SOILS DIVISION)
D. Browne, B.Agr.Sc.

Sheep Research Centre
Creagh, Ballinrobe, Co. Mayo. Tel.: Ballinrobe 75
P. Bergin, B.Agr.Sc., *Station Manager*

- (m) ANIMAL BREEDING AND GENETICS DEPARTMENT
J. P. Flanagan, B.Agr.Sc.
- (n) ANIMAL NUTRITION AND BIOCHEMISTRY DEPARTMENT
W. Sheahan, B.Sc.

- 2. Horticulture and Forestry Division**
Headquarters: Glasshouse and Vegetable Crops Research Station, Kinsealy,
Malahide, Co. Dublin. Tel.: Dublin 348285
J. G. D. Lamb, B.Agr.Sc. Hort., Ph.D., *Chief Horticultural Research Officer*:
fruit and vegetable variety trials; glasshouse crops
Miss E. Conroy, M.Sc.: chemistry and biochemistry of vegetable crops
- (a) DEPARTMENT OF VEGETABLE CROPS
J. C. Cassidy, B.Agr.Sc. Hort., *Head, Station Manager*: crop protection; onion
investigations
O. G. Goodman, M.Agr.Sc. Hort., Ph.D.: vegetable variety research
P. MacGiolla Ri, M.Agr.Sc. Hort.: vegetable nutrition
Miss M. D. Prendiville, M.Agr.Sc. Hort.: plant breeding (horticultural crops)

- (b) DEPARTMENT OF GLASSHOUSE CROPS
M. J. Woods, M.Agr.Sc. Hort.: tomato research
J. C. R. Seager, B.A., Agr.B.: flower research

Mushroom Unit
Miss D. O. O'Donoghue, B.Sc.: mushroom research

Pomology Research Station
Dungarvan, Co. Waterford. Tel.: Dungarvan 214
N. D. O'Kennedy, B.Agr.Sc. Hort., *Station Manager*: apples, pears, plums,
cherries

Soft Fruits Research Centre
Clonroche, Co. Wexford. Tel.: Clonroche 24
T. O'Callaghan, B.Agr.Sc., *Station Manager*: currants and berry fruits

Beekeeping Research Unit
L. Feely, M.Agr.Sc. Hort., N.D.B.: beekeeping

REPUBLIC OF IRELAND

3. Plant Sciences and Crop Husbandry Division c/o Comhlucht Siuicre Eireann Teo, Thurles, Co. Tipperary. Tel.: Thurles 11 B. Crombie, B.Agr.Sc., M.Sc., *Chief of Division*

(a) PLANT BREEDING DEPARTMENT

- *V. Connolly, B.Agr.Sc.: grasses and clovers
- *D. P. Feely, B.Agr.Sc.: kale, fodder beets and swedes
- P. Fitzgerald, B.Agr.Sc.: sugar beet
- *H. Kehoe, B.Agr.Sc.: potato breeding
- J. B. MacLachlan, B.A., Agr.B.: sugar beet breeding
- L. O'Connor, B.Agr.Sc.: sugar beet breeding

Cytology Unit

- Miss S. Forde, M.Sc.: sugar beet cytology
- Miss E. Dwyer, M.Sc.: sugar beet cytology
- P. A. Kearney, M.Sc.: sugar beet chemistry

(b) CEREAL CHEMISTRY DEPARTMENT

- Kinsealy, Malahide, Co. Dublin. Tel.: Dublin 348285
- P. Spillane, M.Sc., *Head*: wheat chemistry; influence of fertilizers and herbicides on quality; effects of wheat breeding on quality
- Miss H. McGovern, M.Sc.: biochemical factors in wheat quality

(c) †NEMATOLOGY DEPARTMENT

- At University College Experimental Farm, Ballymun, Dublin 9. Tel.: Dublin 373631
- J. J. Duggan, B.Agr.Sc., Ph.D., *Head*: nematology
- R. Dunne, B.Agr.Sc.: aphids
- J. F. Moore, M.Agr.Sc.: nematology

Nematology Station

- c/o Comhlucht Siuicre Eireann Teo., Carlow. Tel.: Carlow 51
- M. J. O'Reilly, B.Agr.Sc.: nematology of sugar beet
- F. McGloughlin, B.Agr.Sc.: technical officer

Plant Pathology Unit

- At University College Experimental Farm, Ballymun, Dublin 9. Tel.: Dublin 373631
- P. C. Cunningham, M.Agr.Sc.: pathology of root-rot; fungus diseases of cereals
- C. Comerford, M.Agr.Sc.: diseases of root crops
- Miss A. Mangan, B.Sc.: mycology
- F. O'Riordan, B.Sc.: mycology

(d) CROP HUSBANDRY DEPARTMENT

- Oak Park, Carlow. Tel.: Carlow 425
- M. Neenan, M.Agr.Sc., Ph.D., *Head*: crop husbandry, plant protection
- Miss M. C. Frost, M.Sc.: plant protection research
- T. M. Thomas, B.Agr.Sc.: plant protection research

(e) PLANT CHEMISTRY DEPARTMENT

- Oak Park, Carlow. Tel.: Carlow 425
- M. Clancy, M.Sc., Ph.D.: plant chemistry

*Stationed at Oak Park.

†It is proposed to move this Department in 1962 to: Kinsealy, Malahide, Co. Dublin.
Telephone: Dublin 348285.

REPUBLIC OF IRELAND

Plant Genetics Unit

At Trinity College, Kells Ingram Farm, Drogheda, Co. Louth. Tel.: Drogheda 8454

J. B. Thompson, M.Sc.: genetics in relation to plant breeding

4. Rural Economy Division

Headquarters: Sandymount Avenue, Ballsbridge, Dublin 4. Tel.: 684791

T. Breathnach, M.Agr.Sc., *Chief*

(a) AGRICULTURAL ECONOMICS AND FARM MANAGEMENT DEPARTMENT

E. A. Attwood, M.A., *Head*

A. Conway, B.Agr.Sc.: economics of farm management

Miss R. Fennell, M.A.: agricultural and economic development; Common Market economics

J. Heavey, B.Agr.Sc.: economics of grassland management

B. Kearney, B.Agr.Sc.: economics of farm management

M. McGarry, B.Agr.Sc.: economics of farm management

Miss B. O'Carroll, B.A., B.Com.: economics of rural water supply; national food supplies

T. O'Dwyer, B.Agr.Sc.: economics of farm management

F. K. O'Neill, M.A.: capital in agriculture; horticultural economics

R. Power, B.Agr.Sc.: economics of farm management

M. Ross, B.A.Econ.: economics of pig production; economic problems in the Common Market

(b) AGRICULTURAL MARKETING DEPARTMENT

A. P. Power, M.A.: market structure and organization (beef cattle)

J. McMahon, B.Com.: horticultural marketing survey

Farm Buildings Research

P. J. Tuite, B.Arch., M.R.I.A.I.

Rural Sociology

P. Commins, B.Com., H.Dip.Ed.: social surveys in rural areas

(c) AGRICULTURAL ENGINEERING DEPARTMENT

Oak Park, Carlow. Tel.: Carlow 425

M. B. Cunney, B.E.: agricultural machinery testing and evaluation

P. J. Connerford, B.Agr.Sc.: forage harvesters

R. A. Fortune, B.Agr.Sc.: fertilizer distributors

B. Rice, B.E.Mech.: forage harvesters

Economic Test Farm

Herbertstown, Co. Limerick. Tel.: Herbertstown 5.

T. Doody, *Manager*

5. Soils Division

Headquarters: Johnstown Castle Agricultural College, Wexford. Tel.: Wexford 28

P. F. Ryan, B.Agr.Sc., *Chief*

M. Le Clerc, M.A., Agr.B. (Oxon.), *Deputy Station Manager*

A. O'Connor, B.Agr.Sc.: library and information

(a) GRASSLAND NUTRITION AND ECOLOGY DEPARTMENT

W. E. Murphy, B.Agr.Sc., *Head*: grassland manuring and survey

D. Moloney, B.Agr.Sc.: pasture establishment; rejuvenation of old pastures

T. Gleeson, B.Agr.Sc.: fertilizer response on pasture; botanical survey

REPUBLIC OF IRELAND

(b) NATIONAL SOIL SURVEY

- P. Ryan, B.Agr.Sc., M.S., *Head*
M. J. Conroy, B.Agr.Sc.: soil surveyor (forests soils)
J. J. Diamond, B.Agr.Sc.: soil surveyor (hill land studies)
T. Finch, B.A., M.Sc.: soil surveyor, mineralogy
M. Gardiner, B.Agr.Sc.: soil surveyor, and surveys for special purposes
J. Lee, B.Agr.Sc.: soil surveyor (land use studies)
J. P. O'Callaghan, M.Sc.: physical chemistry, X-ray diffraction of clays
M. Ryan, B.Agr.Sc.: soil surveyor
Miss S. Taylor, B.A., B.Sc.: research associate

(c) PLANT NUTRITION AND BIOCHEMISTRY DEPARTMENT

- G. A. Fleming, M.Sc., A.R.I.C., *Head*: spectrographic analyses, selenium investigations
H. D. Fowler, M.Sc., A.R.I.C.: mineral status in respect of organic composition of herbage plants; chromatographic methods
P. McEnroc, B.Agr.Sc.: field investigations in relation to trace elements
Miss B. Wheeler, M.Sc.: plant nutrition; pot culture work

(d) SOIL BIOLOGY DEPARTMENT

- C. L. Masterson, B.Agr.Sc., Hort., *Head*
J. Connolly, B.Agr.Sc.: field surveys; nitrogen fixation

(e) SOIL CHEMISTRY DEPARTMENT

- J. C. Brogan, B.Sc., M.I.C.I., *Head*: methods of soil and plant analysis; soil organic matter
B. S. Coulter, B.Sc.: soil and plant analysis

(f) SOIL FERTILITY DEPARTMENT

- P. McDonnell, B.Agr.Sc., M.S., *Head*
P. A. Gallagher, B.Agr.Sc.: sulphur investigations
T. F. Gately, B.Agr.Sc.: fertilizer investigations; chemistry and nutrition of cereals (malting barley); seed crops
K. Hanley, M.Sc.: phosphate investigations; pot culture
M. Herlihy, B.Agr.Sc.: fertilization of potatoes; analytical methods
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